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# HIGHER EDUCATION IN AMERICA

EDITED BY

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WITH AN INTRODUCTION BY

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## PREFACE

About a quarter of a century ago the scientific movement began to make itself felt in education in this country. Elementary and secondary schools have already had their procedure greatly modified by this still-increasing influence. Colleges and universities have until recent years refused to acknowledge any significant values for them in this source, but this attitude is rapidly changing.

Today nearly two score of them offer formally organized courses in the study of higher education. Since this is such a recent departure, these courses are very dissimilar both in their content and in the method of approach which they represent. Their very existence, however, presents a new need in the field of educational literature. One may earnestly hope that in this venture the mistake will not be made of giving first place to opinion and theory rather than to facts. At present there is a plethora of literature bearing upon the former phase; there is a dearth of material dealing, in anything approaching a consecutive manner, with the objective features of curricula and organization and administration.

It is the purpose of this volume to take an initial step in meeting the need at this point. It brings together for the first time in one unit a discussion of the major aspects of higher education in America today. It is not supposed that the views herein presented will meet with universal acceptance. There has been no desire to collect materials that would have such a reception. Probably no expression pertaining to any major phase of higher education today would be so received. On the contrary, discussion that will lead to critical thinking and reliable evaluation in higher education is one of the outstanding contemporary needs of this field.

The several contributors have had considerable latitude in determining how they should present their materials, though each has also conformed to certain general restrictions. The former condition results in a difference inherent between a volume written by one person and one which is a compilation from several persons. In so far as this feature may be a weakness, ample compensation is to be found in the advantage of each one's having a reasonable amount of opportunity for originality.

R. A. KENT



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## INTRODUCTION

Until comparatively recently progress in higher education has been based upon the personal opinion of a comparatively few persons in favored positions of leadership; now progress in education is being based more and more upon carefully conducted experiment and thoroughgoing scientific inquiry. In making this statement it should be understood that I am speaking in terms of emphasis rather than in terms of inclusiveness. It is a fact, of course, that there are some whose voices are listened to with respect, and it is equally true that science has scarcely penetrated the administration of higher education.

Science makes slow progress in the field of higher education, and for several reasons. One is the reason just referred to: it calls for a new kind of leadership. College administrators have not been overenthusiastic in their reception of the new day, partly for the reason that they find it disquieting. That which undermines tradition, questions established practice, or annihilates one's pet theories, is not likely to be received with open arms upon first acquaintance; and yet it seems clear that those who rely upon the methods and instruments of science are the ones who will soon, if they do not already, sit in the seats of power.

Another reason why educators have been slow to subject the facts and procedures of higher education to scientific inquiry lies with the professors themselves. Taught by a régime that discredited the application of the methods of science to the study of human nature, they have been traditionally unsympathetic, or, rather, predisposed by early training to shun the new point of view. It would be a mistake as well as untrue to maintain that there is no virtue in their position. They have prevented the foisting of many faddistic schemes on the colleges and universities. Furthermore, it is a fact, easily demonstrated, that many of the so-called scientific studies of higher education were unscientific and that many of them laid claims to values not intrinsic in their composition.

There is still another factor that makes it difficult to base progress in higher education upon carefully conducted experiment and tested experience. It is a factor largely psychological in character and inherent in all human nature. One of the strange commentaries upon life in general and upon professional life in particular is its illiberality and

intolerance toward unaccustomed and unfamiliar procedures. How frequently do we discover men trained in the humanities who are still controlled by their prejudices! How difficult it is to find men truly catholic in their sympathies, genuinely liberal, and tolerant of the opinions of others, who are as intellectually interested in and responsive to social and political experiments as they are to experiments in their particular fields! Clearly the humanities do not necessarily make people liberal; nor does science necessarily make those whose interests fall primarily in any of the fields of the physical or natural sciences considerate of the claims of science in other fields. It has not been uncommon for distinguished leaders in the academic and scientific fields to view with suspicion the conclusions of those who were devoting themselves to experiments in higher education.

Two things have shaken this conservative attitude of mind: one is the increase in the number of persons seeking college training, and the corresponding increase in the cost of maintaining colleges; the other is the impact of many studies or investigations worthy of the most careful consideration.

The growth in college registration has produced a number of new problems and has accentuated a number of old ones to the point of creating a situation tantamount to a crisis in higher education. Public opinion has been focused upon college and university education as never before. The public has been, and still is, insisting upon a fair return for the money it invests in higher education, and it has been raising questions as to the desirability of attempting to provide college training for all those who are applying, and as to its ability to pay for it or for a considerable share of it.

Arising out of this situation and out of the spread of science in every field, including education, have come two streams of influence, powerful in nature and impelling in their forcefulness. These two streams, however, have been actuated by the same purpose or motive, — that is, the careful, methodical, and (so far as possible) scientific study of every matter and of every problem in the field of higher education. One of these streams of influence arises out of public opinion, which is demanding a stricter accounting of the claims of education, and the other flows directly from the spread and the increasing popularity of science everywhere, including the field of education. The result is that college and university administration and instruction are now for the first time coming under the spotlight of scientific scrutiny and inquiry.

Even though this movement is on and we are caught by its swing, we are still far from a science of higher education. It is true that we

*actually know* many things which we did not know a few years ago ; it is true also that many of our surmises have been entirely discredited or disproved ; yet the mass effect of such studies as have been made is too limited to overcome the inertia of institutional tradition.

The fact that college professors and administrators everywhere are less willing to base practice on tradition and opinion than heretofore is hopeful. They are asking for standards, norms, demonstrations, and facts. The movement for the standardization of higher institutions of learning has been productive of good results. The standards applied to all colleges in the beginning were largely quantitative in nature. They raised the tone and standard of the institutions to which they were applied. More recently it has been discovered that many of these quantitative requirements are crude and unreliable, and, moreover, that they often appear to have little relation to the qualitative results secured by the institution ; so that now the criteria for the standardization of colleges and universities are being subjected to the most careful study and scrutiny.

The coöperation which the various universities and standardizing associations of this country have had from the great foundations has contributed enormously to the careful study of problems in the field of higher education. These coöperative studies have not been confined to costs, square feet of space, number of books in the library, amount spent annually for laboratory equipment ; they have dared to invade the sacred precincts of the classroom and to investigate the technique of instruction. No one, I presume, would gainsay the statement that the teaching of mathematics, of English, of Latin, of foreign language, and of the social sciences has been greatly improved by these studies. It cannot be maintained, however, that nothing remains to be done. Indeed, the work has scarcely begun. The next ten years will see more progress, more improvement in every phase of higher education, based upon experiment, methodical analysis, and scientific procedure, than the last thirty years have produced.

One is appalled when he thinks of the number of things we do not know about higher education. Is it impossible, for example, to define the aims or objectives of a college education and to organize programs for their attainment ? Who knows what constitutes or should constitute the "threshold" of college work ? What relationship is there between the various college programs and the life pursuits of those who have taken them ? Are prerequisites based upon opinion or has their necessity been demonstrated in each instance ? Should the methods of instruction in any of the subjects vary with types of ability or should all students be taught alike in a given subject ? What is

the optimum size of class for college work? What type of laboratory period produces the best result? Is it a fact that "honors courses" produce better scholarship than *class* systems? How should the subject matter of the various fields be organized to produce the best results? How can real college teachers be discovered and developed? These and many other questions may be asked, all of which remain unanswered.

America has pursued her way in education, as in nearly everything else, stumbling here and halting there, moving forward in a zigzag fashion. She has found it difficult to set up remote goals and to strive to achieve them. She has compromised with the future and has pursued the paths of least resistance. Now, in her teaching effort, she is trying to catch step with progress in other fields, partly because she wants to, partly because she must.

The most hopeful thing about the whole movement is that the experts in the various fields of learning are devoting themselves in increasing numbers to the study of their common problems. When the leaders in any field begin to question and to check their purposes, their work, and their results, and when they call to their assistance experts in related fields, then and only then does there exist a basis for intelligent progress. That is what is happening everywhere throughout the field of higher education. Therein lies the hope of progress.

LOTUS D. COFFMAN

# HIGHER EDUCATION IN AMERICA

## PART I. DIVISIONS OF INSTRUCTION IN HIGHER EDUCATION IN AMERICA



# CHAPTER I

## THE JUNIOR COLLEGE

By LEONARD V. KOOS, Professor of Secondary Education,  
The University of Chicago

### RECENT GROWTH AND PRESENT STATUS OF THE JUNIOR COLLEGE

In view of the present trend of thought with reference to education on the junior-college level (that is, on the level of the first two college years) the question may be raised by some as to whether it falls within the scope of higher education proper and should therefore be considered in a work presumably concerned only with higher education. This trend is to regard it as a part of secondary education. With this point of view the writer has a good deal of sympathy. At the same time there are important practical considerations supporting some treatment here of the junior college, among them the facts that these years are still predominantly administered as part of higher education and that there must always be more or less overlapping of the work of secondary schools and higher institutions. Such treatment as is accorded the junior college in this chapter concerns (1) its recent growth and present status, (2) its purposes, and (3) its curriculum. Certain additional problems, such as those of organization, housing, staff, location, maintenance, and entrance requirements, are referred to in the brief concluding section of the chapter.

One who reads at all widely on education frequently encounters conjectures as to the recent growth and present status of the junior college. These estimates usually pertain to the numbers of units of this new organization in operation, their enrollment, and the like. Some of these estimates are wild indeed, and few if any are based on an actual recent count. In endeavoring to predict the future organization of American education and the place of the junior college in it, it is desirable from time to time to take some sort of inventory of the movement. It is the purpose of the first section of this chapter to report simply and briefly on the recent growth and present extent of the movement. Such a report may appropriately precede the treatment of purposes and curriculum.



The materials reported have been drawn from two studies of the extent of the junior-college movement, one made for and during the year 1922<sup>1</sup> and the other for and during 1927.<sup>2</sup> Thus the data at hand apply to points five years apart. In order to keep the data on comparable bases the later study was made by methods which, so far as possible, were identical with those used in the first study. Essential elements in the procedures were (1) inquiries aiming to locate all junior colleges in operation and (2) inquiries to all junior colleges as to dates of establishment, enrollment by year and sex, auspices of control, etc. Inquiries of the former sort went to all state departments of education, all state universities, and all junior colleges already on lists kept by the writer and drawn from several sources. All three of these sources aided in discovering junior colleges recently organized. Wherever it was necessary to secure a response, second and third inquiries of the latter sort were sent to institutions not answering the first request. Even the third request did not elicit responses from all institutions appealed to, although the number not making some kind of acknowledgment was very small. In cases of failure to respond, the institution was left off the final list of junior colleges, except where the writer had evidence through other avenues that it was operating as a junior college. For this and other reasons it may be assumed that what is being reported for both periods is *less* than a full count of junior colleges. Until we have some official agency to assemble the data, we shall never be able to report full counts of such units.

A few further explanatory comments are necessary for an adequate appreciation of the data reported below. No institution is included whose authorities indicated a preference *not* to be included in a list of junior colleges. Among those thus excluded from the count here reported are a number of institutions offering four years of college work but approved for only two years of college work by the local university or other standardizing agency. From the list for 1927 were excluded a few institutions now giving only two years of college work

<sup>1</sup> The findings of this earlier canvass were made available in Chapter I of the author's "The Junior-College Movement" (Ginn and Company, 1925) and "The Junior College" (University of Minnesota Press, 1924).

<sup>2</sup> The later study was reported in the *School Review* for April, 1928. The findings of a study by Frederick L. Whitney of the status of the junior-college movement in 1927-1928, the year following the second canvass represented in the data here reported, have been summarized in the *Seventh Yearbook* of the Department of Superintendence of the National Education Association, pp. 216-220. This report appears in more extended form in the same author's "The Junior College in America" (Colorado State Teachers College, 1928). These more recent data show the continued growth of the institution.

and classifiable as junior colleges, whose authorities look forward to early extension to include the two remaining college years, and therefore prefer not to have these institutions identified with junior colleges. On the other hand, not all institutions which have been included in the two counts, and which offer one or two years of college work, have had this work approved by a standardizing agency. This procedure may seem open to criticism, but is justified by the absence, to date, in certain states and in wider-than-state areas, of agencies to standardize junior colleges, and even more by the fact that extent of development of schools on other levels (for example, high schools and colleges) is often, and quite properly, measured without regard to standardization.

With the exception of the lower divisions of colleges and universities, which are not being considered here, the total number of junior colleges discovered for 1927 after the manner of inquiry described is 325 (see Table I). This is well over a hundred more than were in operation during 1922.

TABLE I. NUMBERS OF JUNIOR COLLEGES OF EACH AND ALL TYPES, NUMBERS OF STUDENTS ENROLLED (1922 AND 1927), AND PERCENTAGES OF INCREASE

| TYPE OF UNIT      | SCHOOLS |      |                      | STUDENTS |        |                      |
|-------------------|---------|------|----------------------|----------|--------|----------------------|
|                   | 1922    | 1927 | Per Cent of Increase | 1922     | 1927   | Per Cent of Increase |
| Public . . . . .  | 46      | 105  | 128                  | 5,163    | 16,382 | 217                  |
| State . . . . .   | 24      | 31   | 29                   | 3,276    | 3,763  | 15                   |
| Private . . . . . | 137     | 189  | 38                   | 7,682    | 15,485 | 102                  |
| All . . . . .     | 207     | 325  | 57                   | 16,121   | 35,630 | 121                  |

1. *Public junior colleges.* Of this whole number almost a third (105, to be exact) were *public* junior colleges, that is, parts of local public-school systems. For the most part these units are maintained in connection with public high schools. This represents an increase from a total of 46 units in 1922, and means that the number of such units was more than doubled during the half-decade intervening.

2. *State junior colleges.* The group designated as state institutions numbered 31, an increase of only 7 since 1922. This is an exceedingly diverse group, including as it does, among others, 7 maintained as parts of normal schools or teachers' colleges; 3 as county schools supported mainly from state resources in a state in which the county is not a dominant educational unit; 1 as a branch of the state uni-

versity; at least 3 as branches of the state college of agriculture and mechanic arts; and a number of others more or less independent of other educational institutions but under state control. It is significant to note that the number in normal schools and teachers' colleges dropped between 1922 and 1927 from 18 to 7. This decrease represents a marked defection from the movement by teacher-training institutions. It seems, however, not to be out of harmony with a somewhat general instability and heterogeneity of the state type of junior college.

3. *Private junior colleges.* Institutions of this type outnumbered the total of both the foregoing, 189 having been located during the progress of the more recent survey. This is an increase from 137 in 1922, — an increase of 38 per cent. The term "private," of course, represents a wide variety of types of control, ranging from private-venture schools maintained for profit at one extreme, to units under complete denominational control at the other.

Reports on enrollment during 1926-1927 are at hand for 284 of the 325 junior colleges of 1927. Such data are, quite naturally, not available for 18 units beginning operation during the school year 1927-1928. Of the remaining 23 for which data on enrollment were not reported, 5 are public units, 7 are state units, and 11 are private units. Three of the state units not reporting could not do so because of the impossibility of distinguishing junior-college and teacher-training students. The full count of enrollment in junior-college years only, in the 284 units reporting for 1926-1927, was 35,620, the equivalent of the enrollment in four or five large universities or in one hundred to one hundred and fifty "small colleges." The enrollment in each of the three types of junior colleges was public, 16,382; state, 3763; and private, 15,485 students. Compared with 1922 the total enrollment in 1926-1927 represents an increase of 121 per cent. The increases for the three types were public, 217 per cent; state, 15 per cent; private, 102 per cent. Judged by the increments both in numbers and in enrollment the public junior college is more dynamic than the private junior college, and, in turn, the private junior college than the junior college on state foundations.

It should give some clue to forces at work within the movement to note not only the total number of junior colleges but also the facts concerning discontinuances of junior-college units once in operation. A comparison of the complete lists for 1922 and 1927 shows 36 units in the former no longer included in the latter, — 5 of the public type, 11 of the state type, and no less than 20 of the private type. (1) Of these 5 public units, one was in effect lost to the move-

ment by extension to four-year college status, another was merged with a larger unit within the same system, and for the remaining 3 the work was dropped. One of these 3 was in a community too small to warrant maintenance; the reason given for discontinuance of the other two was "economy." (2) Of the 11 discontinuances in the state group, all were in normal schools and teachers' colleges, and giving up the junior college was in some way related to extension to four-year status. (3) Of the 20 discontinuances among private schools, 11 involved elimination of the junior-college work in most instances (perhaps because of debility), 1 was burned, while 8 experienced extension to four-year college status. Thus the largest factor of loss to the movement is upward extension, another factor being general weakness.

The growth and status of the junior college are shown not merely by the number of institutions in existence and by the facts on gross enrollment, but also by the enrollments in typical or average units. Certain measures of tendency as to size are presented in Table II.

TABLE II. MEDIAN ENROLLMENTS, RANGE OF ENROLLMENTS OF THE MIDDLE 50 PER CENT, AND AVERAGE ENROLLMENTS OF EACH TYPE AND OF ALL TYPES OF JUNIOR COLLEGES, 1922 AND 1927

| MEASURE                | PUBLIC |      | STATE |      | PRIVATE |      | ALL  |      |
|------------------------|--------|------|-------|------|---------|------|------|------|
|                        | 1922   | 1927 | 1922  | 1927 | 1922    | 1927 | 1922 | 1927 |
| First quartile . . . . | 39     | 49   | 28    | 73   | 28      | 36   | 28   | 41   |
| Median . . . . .       | 60     | 103  | 78    | 101  | 44      | 70   | 47   | 80   |
| Third quartile . . . . | 151    | 194  | 195   | 164  | 72      | 116  | 85   | 138  |
| Average . . . . .      | 143    | 188  | 156   | 157  | 61      | 90   | 89   | 125  |

These measures disclose evidence of notable growth not only for all junior colleges as a group but also for each of the three types of institutions considered. This is especially remarkable in view of the large number of *new* units, which might naturally tend to be smaller than those of earlier establishment. Of the three types, public junior colleges are largest, state junior colleges almost as large, and private junior colleges considerably smaller than the two types first named. The measures reported indicate also that many junior colleges of all types are small, especially when compared with the tentative minimum standard of one hundred and fifty to two hundred students proposed elsewhere by the present writer.<sup>3</sup> There are, on the other

<sup>3</sup> The Junior-College Movement, pp. 380-381. Ginn and Company, 1925.

hand, many junior colleges that can now qualify on such a standard, and the comparison of figures for 1922 and 1927 shows progress prophetic of further improvement in this regard.

The geographic distribution of the 325 junior colleges of 1927 is shown in Fig. 1, an outline map of the United States in which the location of each institution is indicated by type. A major impression afforded by examination of this map is that junior colleges are rather generally distributed over the entire country. In fact, in that year they were to be found in 39 of the 48 states and in the District of Columbia. The 9 states for which no examples of the new organization were reported in 1927 are Vermont, New Hampshire, Rhode Island, Delaware, New Jersey, South Carolina, Montana, Wyoming, and Nevada, — 3 New England states, 2 Middle Atlantic states, 1 state in the South, and 3 sparsely settled Western states. In 1922 there were 11 states without junior colleges.

TABLE III. DISTRIBUTION, BY SECTIONS OF THE COUNTRY, OF THE THREE TYPES OF JUNIOR COLLEGES, 1922 AND 1927

| SECTION                           | PUBLIC |      | STATE |      | PRIVATE |      | TOTAL |      |
|-----------------------------------|--------|------|-------|------|---------|------|-------|------|
|                                   | 1922   | 1927 | 1922  | 1927 | 1922    | 1927 | 1922  | 1927 |
| New England and Middle Atlantic . | 2      | 3    | —     | —    | 9       | 16   | 11    | 19   |
| Southern . . . . .                | 1      | 18   | 3     | 12   | 69      | 90   | 73    | 120  |
| Mid-Western . . . . .             | 25     | 54   | 11    | 8    | 44      | 66   | 80    | 128  |
| Western . . . . .                 | 18     | 30   | 10    | 11   | 15      | 17   | 43    | 58   |
| All . . . . .                     | 46     | 105  | 24    | 31   | 137     | 189  | 207   | 325  |

A helpful basis of generalization on the distribution of junior colleges, as well as on their development in the several sections of the country, over the five-year period, is afforded in Table III. Considering only the data for 1927, we may note that the Mid-West leads in the number of public units, reporting more than half the total organizations of this type. It is followed in order by the West (almost all public units here being in California), the South, and the north-eastern section. No section leads at all notably as to the number of units on state foundations, an interesting fact being the total absence of units of the state type from the northeastern section. The South leads in the number of private units, fully half of all organizations of this type being reported from this section. It is followed by the Mid-West and at a farther distance by the western and northeastern

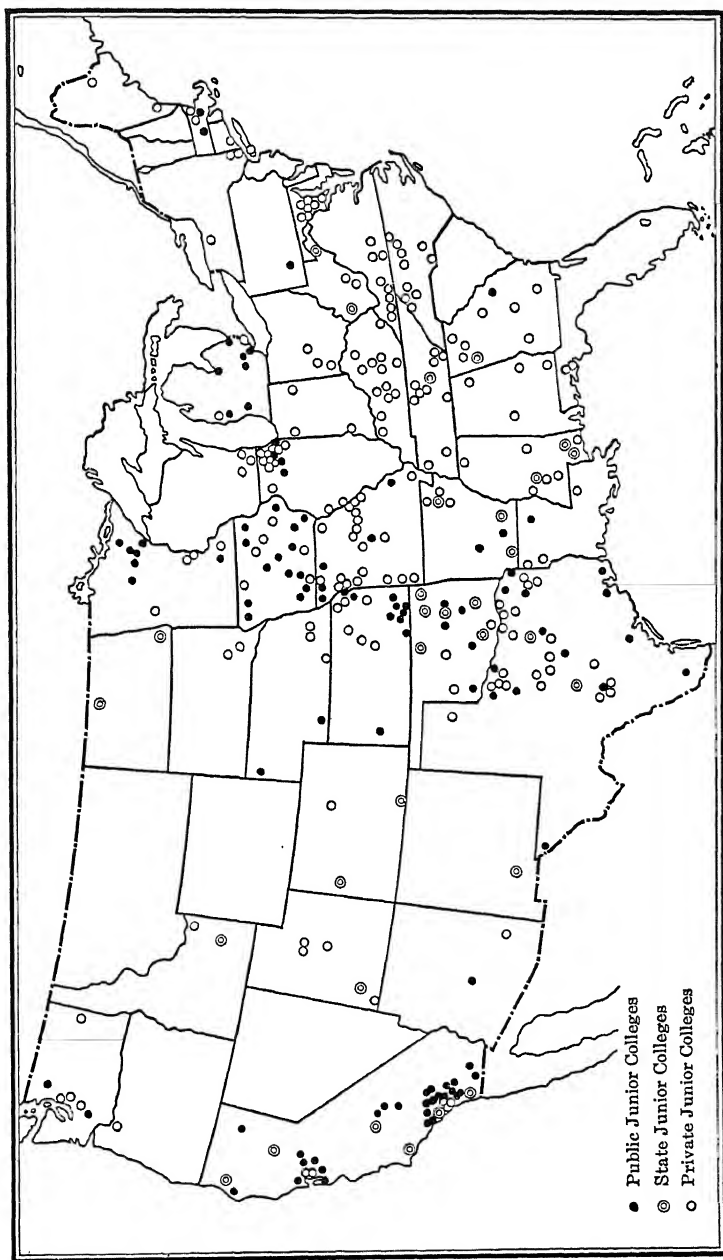


FIG. 1. Map showing the location of Junior Colleges by types, 1927

sections. When totals of all types are considered, the Mid-West and South lead with approximately equal numbers, and are followed by the western and northeastern sections.

If, next, we turn our attention to the comparisons of data for 1922 and 1927 made possible in Table III (p. 8) we may note that, when all types of units are considered (see last two columns), the movement made large proportionate gains in all sections. For the most part the growth of the three types in each of the sections is roughly consistent with this general increase. Among the more outstanding exceptions are those relating to public units in the South and state units in the South and Mid-West. Public junior colleges in the southern section increased from 1, in El Paso, Texas, to 18, most of these also in Texas, but with scattered units elsewhere. There was also a marked increase in state units in this section. The only decrease in numbers of units for any type was for state units in the Mid-West. The loss is accounted for by the discontinuance of junior colleges in the normal schools of Wisconsin and to some extent in other states, — a loss partly offset by the establishment of certain state units in Oklahoma.

It was possible to obtain information concerning the year of establishment of junior-college work for 303 of the total of 325 units in operation in 1927 represented in this study. These have been compiled cumulatively for each type and for all types, with results as shown in Fig. 2. In interpreting the data presented it should be kept in mind that they do not include junior colleges that were in operation at some time during the period represented but were discontinued before the school year 1926-1927. Units of the private type are shown to have come first on the educational scene, to have largely determined the growth of the movement as a whole over a period of almost fifteen years, and to have outnumbered the other types throughout. The first examples of the public type made their appearance shortly after the opening of the century, but this type did not manifest rapid development until about 1914 and 1915. Since that time the rate of its growth has been an accelerated one. Units of the state type were the last to appear, and their increase has been slower than that of other types. Because the figure does not include junior colleges discontinued before 1926, it cannot disclose the fact that the earliest examples of the state type were in operation in 1910 and 1911.

Looking finally at the curve of growth for all junior colleges, we note that *almost all of it has taken place during the last fifteen or twenty years*. In point of fact, only 38 of the 303 units represented in the figure were in operation in 1912, only seventeen years ago. It would

be difficult to overemphasize the importance of a development of this rapidity. One way of stressing it may be by comparison with the growth and present status of colleges and universities. There are listed annually in the Educational Directory of the United States

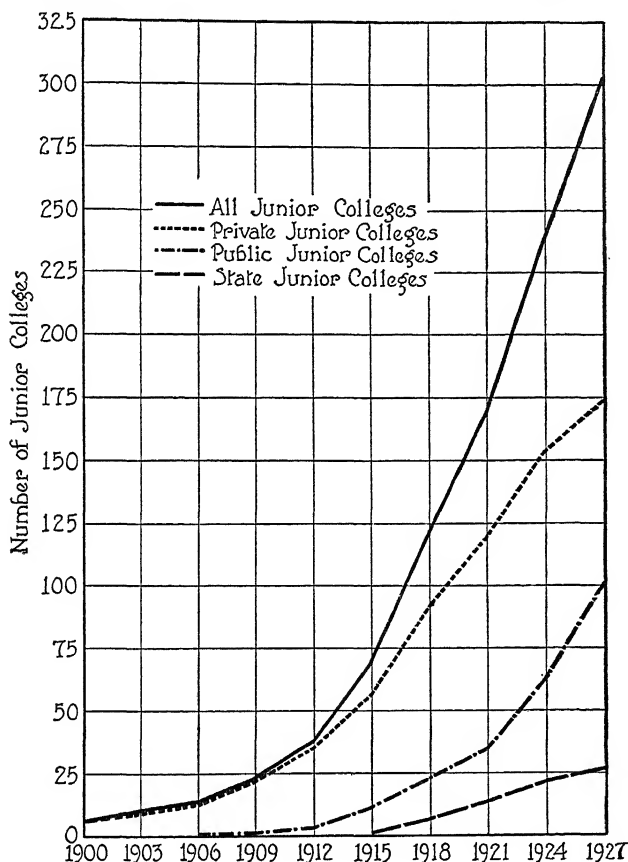


FIG. 2. Number of junior colleges of each type and all types in operation at each three-year interval from 1900 to 1927, inclusive

Bureau of Education a total of from six hundred to seven hundred such higher institutions, not including state normal schools, teachers' colleges, and junior colleges. This number includes, of course, many feeble four-year institutions. It represents a development extending over the period of approximately three centuries since the establish-



ment of Harvard College in 1638. *For this new organization, the junior college, virtually within a period of fifteen to twenty years, to increase the count of its representatives to the number of half the total of four-year colleges and universities* is nothing if not extraordinary. In view of this remarkable development it is high time that the junior college be taken seriously into account by all those who would shape the destinies of secondary and higher education in America.

### THE PURPOSES OF THE JUNIOR COLLEGE

The junior college, like other units in the system of education, has had a host of claims made in its behalf. So far as they are acceptable they may be regarded as the special functions or purposes of the new institution. For the sake of brevity and simplification they will be considered under four main heads as (1) the isthmian, (2) the democratizing, (3) the socializing and conserving, and (4) the reorganizing purposes of the junior-college movement. Certain additional purposes, implicit in some of these, will be introduced during the discussion of the junior-college curriculum in the section next following.

1. Extended inquiry along several lines induces the conviction that the strong junior college will be able to qualify on the claim that it *will do satisfactorily the first two years of college and university work, that is, perform the isthmian function.* While the typical total offering in the new institutions does not often compare favorably with the range of courses available to freshmen and sophomores in colleges of liberal arts, it does compare favorably with the work actually taken by any considerable proportion of such students, since this is much narrower in scope than the full range of courses listed as open to underclassmen. Moreover, a check of these junior-college offerings against the work required in two preprofessional years in law, medicine, dentistry, business, education, etc., and in the first half of professional curricula usually beginning with the first college year, like engineering, agriculture, and home economics, promises that a standardization of these curricula will make it possible for a proper development of junior colleges to take care of the curricular needs, during two years, of those who contemplate entrance upon professional careers. This conviction has the support also of the results of a comparison of junior-college teachers, on the one hand, with those giving instruction to underclassmen in colleges and universities on the other, as to periods of graduate preparation, experience, teaching load, quality of instructional work in the classroom, remuneration and the like. Although the instructional staff of the junior college

lags behind that of other higher institutions in some of these respects, from the standpoint of the newness of the movement its present instructional situation is prophetic of adequacy as the junior college grows to maturity. Further evidence that the junior college will be able to perform this function of giving satisfactorily the first two years of work in college and university is provided in the fact that two comparable groups of students, the one having done two years of work in junior colleges and the other in a state university, have been found to have well-nigh equivalent records during the third year of attendance in higher schools.

In one institution of unquestioned standards, Stanford University, to which large numbers of junior-college graduates have transferred, and where, therefore, it has been feasible to study this problem with considerable care, these graduates, as a group, have been found to make a gratifying record.<sup>4</sup> Men transferring after two years in the junior colleges, although not doing as well during the first quarter after transfer as "native Stanford men" (that is, those who have been in attendance there since their freshman year), manifest, on the average, a markedly superior scholarship during remaining quarters of the four-year period. Women from the junior colleges did, on the whole, almost as well as "native Stanford women."

2. Under the general head of the purpose of *democratizing educational opportunities* on the level of the first two college years have been placed such claims as "*rounding out*" in the junior college the education of students not going on, *affording training for semiprofessions, and popularizing higher education through lowering its cost and bringing it nearer the home of the student.* These expand the scope of the new unit far beyond the first purpose, which, if the only one accepted, would make of the junior college little more than an isthmus connecting the mainland of elementary and high-school education with the peninsula of professional and advanced academic education.

The interests of those who cannot or should not go on to higher levels of training will be better cared for in institutions in which these junior-college years are terminal than in those where in the nature of things they are looked upon as preliminary to and selective for higher levels, and where the focus of attention is on curricula four or more years in length. From the standpoint of the right of the less capable students to complete college and university curricula four to eight years in length, the large-scale elimination now characteristic of our higher institutions is not entirely without justification. It is

<sup>4</sup>Walter C. Eells. Records of Junior-College Transfers in the University. *School Review*, 37: 187-197, March, 1929.

only when it is faced by our American aspirations for democracy of educational opportunity that this elimination, with its accompanying ruthless disruptions of life plans, appears intolerable, especially as few, if any, of those eliminated fall below in mental caliber the mid-point of our literate white draft during the World War. Without reorganization along junior-college lines the present rising tide of popular education is certain to increase the extent of elimination and the proportion of young people taking parts of truncated curricula, — for example, loose ends of elementary foreign language and supra-arithmetical mathematics prescribed as preliminary to further education to which students forced out do not attain.

For similar reasons we cannot expect our colleges and universities to develop opportunities for education in the semiprofessions, — occupations the period of training for which will terminate with junior-college years. Nor could students in large numbers in such higher institutions be induced to enter upon such curricula if offered, because of the loss of caste in aspiring to less than the highest available and aimed at by other students in the same institution. This would be true no matter how appropriate such training might be to the individual or how serviceable to society at large. When sufficient allowance is made for the fact that, in these earlier stages of growth of the movement, junior-college authorities, like those in charge of the high schools of a quarter of a century ago, are endeavoring first to perform satisfactorily the isthmian function, we are warranted in characterizing the beginnings made along semiprofessional lines as genuinely propitious, even though these beginnings are not now very extended.

The claim of popularization of these years of higher education through lower cost and nearness to the home of the student is well supported by the strikingly lessened expense of attendance where students live at home; the increased proportions of the populations enrolled in the first two years of college work in communities with local higher institutions; and, most critical test of all, the actually larger proportions, as compared with other higher institutions, of those from lower economic levels who attend the public junior college.

3. The grounds for the faith that the junior college *exercises conserving and socializing influences* in ways now impossible in larger higher institutions are to be found in the younger age at which parents are willing to intrust their sons and daughters to the former because they can live at home while in attendance, in the smaller total enrollments tending to prevent the "depersonalization" of the educational process now far too characteristic of the larger schools,

and in the better opportunities for laboratory practice in leadership in extracurricular activities made possible in the junior college by the absence of upperclassmen, who in the other higher institutions tend to monopolize the functions of leaders.

4. The far-reaching *reorganization* which is disclosed by any thoroughgoing investigation of tendencies in higher education during the past century has come upon our secondary schools, colleges, and universities so gradually and imperceptibly that there is little general consciousness of its profound character and of the timeliness of the advent of the junior college.

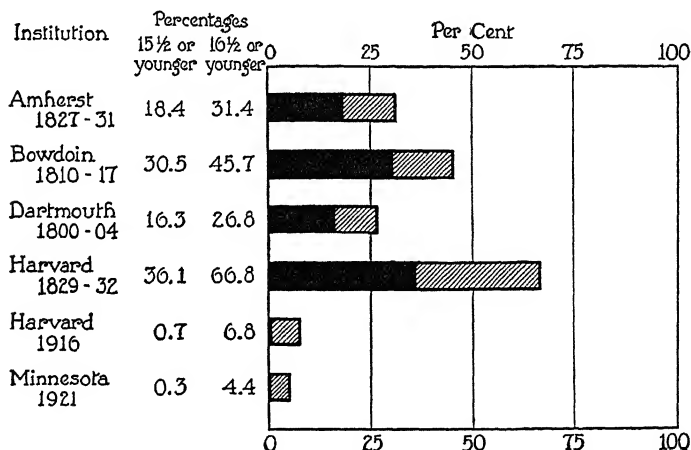


FIG. 3. Percentages of freshmen entering five institutions at different periods who were  $15\frac{1}{2}$  years of age or younger and  $16\frac{1}{2}$  years of age or younger. (Black,  $15\frac{1}{2}$  years or younger; black and shaded combined,  $16\frac{1}{2}$  years or younger)

a. To illustrate one significant fact of change, *the advancing age of the college entrant*, it may be said that during the half century from 1830 to 1880 the average age of Harvard freshmen increased by fully two years, — the period covered by the junior college (see Fig. 3). There were comparable increases in age in other New England colleges.

b. During three fourths of a century the scope of *admission requirements* expanded from the approximate equivalent of seven or eight present-day units to twice the number, or by two years of work. This is in harmony with the advance in age.

c. This increment was largely inherited from the college curriculum in which *subjects and courses experienced a steady depression* to lower and lower levels (see Table IV). For instance, beginning algebra and

geometry, prescribed for college freshmen until long past the middle of the last century, became materials of instruction in the high school; and general chemistry and physics, formerly required of college juniors and seniors, are now available, in enhanced rather than diluted form, to students of the same classification in the lower school. The only subjects not being depressed were Latin and Greek. The downward shift is so notable as at first to seem hardly credible. What a sound basis they have who refer to the high school as the "people's college"!

TABLE IV. YEARS IN WHICH CERTAIN COLLEGE SUBJECTS WERE GIVEN IN AMHERST, WILLIAMS, AND YALE AT INTERVALS FROM 1825 TO 1920<sup>5</sup>

| SUBJECT                                   | DATE OF ISSUE OF CATALOGUE |         |         |         |         |         |
|---|----------------------------|---------|---------|---------|---------|---------|
|   | 1825                       | 1845    | 1865    | 1885    | 1905    | 1920    |
| Homer . . . . .                           | 1, 3                       | 1, 1, 1 | 1, 1, 1 | 1, 1, 1 | 1, 1, 1 | 1, 1, 1 |
| Beginning French . . . . .                | 3                          | 2, 3, 3 | 2, 3, 3 | 2, 3    | 1, 1, 1 | 1, 1, 1 |
| English grammar . . . . .                 | 1, 1                       | 1       | —       | —       | —       | —       |
| English literature . . . . .              | —                          | —       | 3, 4, 4 | 2, 3, 4 | 1, 2, 2 | 1, 1, 2 |
| Arithmetic . . . . .                      | 1, 1, 1                    | —       | —       | —       | —       | —       |
| Elementary algebra . . . . .              | 1, 1, 1                    | 1, 1, 1 | 1, 1    | 1       | —       | —       |
| Trigonometry . . . . .                    | 2, 2, 2                    | 2, 2, 2 | 1, 1, 2 | 1, 1, 1 | 1, 1, 1 | 1, 1, 1 |
| Analytic geometry . . . . .               | —                          | 3       | 1, 2, 2 | 2, 2    | 1, 2, 2 | 1, 1, 1 |
| Physics or natural philosophy . . . . .   | 3, 3                       | 3, 3, 3 | 2, 3, 3 | 3, 3    | 1, 2, 2 | 1, 1, 2 |
| General chemistry . . . . .               | 3, 4                       | 3, 3, 4 | 3, 3, 3 | 2, 2, 4 | 1, 1, 2 | 1, 1, 2 |
| Zoölogy or natural history . . . . .      | 4                          | 3, 4, 4 | 3, 3, 4 | 2, 3, 3 | 2, 2    | 2       |
| Geology . . . . .                         | 4                          | 4, 4    | 3, 4, 4 | 3, 4, 4 | 3, 3, 3 | 2, 3    |
| Psychology or mental philosophy . . . . . | 4, 4                       | 4, 4, 4 | 4, 4, 4 | 3, 4    | 2, 3, 3 | 2, 2, 3 |
| Economics (political economy) . . . . .   | 4                          | 3, 4, 4 | 3, 4, 4 | 3, 4, 4 | 2, 3, 3 | 2, 2, 3 |

d. The *organization of college curricula* has undergone far-reaching modification in harmony with the changes already noted. Fully prescribed curricula were the rule a hundred years ago. Along in the fifties and sixties came some measure of option, which increased in proportion until toward the end of the nineteenth century, when everything was elective excepting certain courses in freshman and sophomore years.

e. Out of this curricular chaos emerged the *major system* operative in junior and senior years and now all but universal in our colleges; and whatever may be the intentions of college authorities in prescribing the major, it is usually selected by the student in terms of his occupational plan.

<sup>5</sup> The figure "1" means that the subject was listed for freshmen; the figure "2" means that the subject was listed for sophomores; etc.

f. But these are not the only concessions being made to the demand for making occupational the upper portions of collegiate training, as may be judged by the fact that almost three fourths of the catalogues of institutions of the small-college type divulge, on examination, one or more modifications, such as *preprofessional curricula* two or three years in length and strong departments offering *majors or curricula in professional lines*, such as business administration, engineering, and home economics.

g. All these changes have been accompanied during the last third of a century by a shift of enrollment that has made the higher institution of university and polytechnic type, from the standpoint of total registration, the dominant one; that is slowly but unmistakably making of the separate college (at least in the Middle West), as determined by the length of stay of its students, more and more a junior college, while at the same time proportionate registration in the third and fourth years in the university is increasing; and that finds a declining proportion of men in the upper years of the liberal-arts unit in the university.

These changes, from the advancing age of the college student to the shift of enrollment, are all of a piece, — links in a single chain of evidence. All lead to the conclusion of the appropriateness of a junior-college line of cleavage somewhere near the middle of the four-year college period, with junior-college years as the concluding period of *general* education, and the third college year as the point of beginning specialization.

The inheritance by the high school of courses formerly given only in the college leads one to expect a large amount of *overlapping* in the curricula. The expectation is fully corroborated by the results of careful inquiry, — a fact which gives additional support to acceptance of the reorganizing purpose of the junior college. This duplication may be looked at in two ways. In the first of these, the two institutions concerned give courses that are more or less identical, such as beginning modern foreign language and first courses in chemistry. The large degree of identity argues that the division between high-school and college work is arbitrary and illogical, that our present boundary line between schools cuts across a field of learning essentially inseparable. In addition to the duplication of courses there is actual repetition, by the individual student in the college, of subject matter that he has already covered in the high school. The extent of this repetition during the first two college years has been estimated, after investigation, at a sixth to a fifth of the student's high-school work. Much of this is waste and arises

primarily from the fact that the courses are taken in two separate institutions, the upper of which is not sufficiently cognizant of what is going forward in the lower. Avoidance of repetition and the working out of a reorganization of courses bringing with them proper sequences cannot come until all work of a similar sort is, through junior-college reorganization, brought into a single unit of the educational system.

### THE CURRICULUM OF THE JUNIOR COLLEGE <sup>6</sup>

One may raise the question, at the outset of this brief discussion of the junior-college curriculum, whether it should be from the standpoint of the immediate needs faced by those now administering junior-college units or from the standpoint of the need for a long-time curriculum policy directed toward a more remote but more fundamental solution of the problem. The writer will be sufficiently presumptuous to include references to both issues, moving by a progression of steps from the first to the second. In this consideration he will deal primarily with the problem of the junior-college curriculum as it confronts those in charge of junior colleges of the three types concerning which data were reported in the first section of this chapter. However, some reference will be made to the problem in junior colleges which are divisions of four-year colleges or universities.

During this consideration of curriculum issues as they pertain to the junior college the main divisions of purposes as just generalized will be dominant, even though they may not be specifically mentioned at every possible point in the discussion. In addition the recognition in junior-college curricula of certain other purposes will be considered, — purposes which are implicit rather than expressly mentioned in the broad generalizations already made and which are likely to come clearly into the light when one sets out on the specific task of organizing the curriculum for students on this level. These corollary purposes are suggested, even if not always unequivocally stated, in certain additional materials gleaned from the announcements of junior-college divisions of universities.

The procedure used in canvassing the immediate curriculum needs of junior colleges has been that of tabulating the offerings and prescriptions in the first two years of (1) a large number of arts colleges, most of these institutions being of the small-college type but

<sup>6</sup> This section is based on an article by the author bearing the title "The Junior-College Curriculum" and published in the *School Review*, November, 1927.

a considerable proportion being arts colleges in universities, and of (2) preprofessional curricula and professional curricula, beginning usually with the first college year. This canvass is clearly in the interests of the *isthmian* purpose of the junior college as this was generalized in the foregoing section. The first glance at the results of this analysis as compared with the offerings in public and private junior colleges was unfavorable to the junior colleges, the average offering, both as a whole and for most of the subject groups in the first two years of the arts colleges, being far in excess of that in the junior colleges. For instance, the average number of semester hours available in the separate arts colleges was 319; in arts colleges in universities, 532. The averages for public and private junior colleges were 255 and 192 semester hours respectively.

However, this method of comparison left out of account the fact that large proportions of courses listed in the college and university catalogues as being open to sophomores were seldom or never taken by students of this classification. The bearing of this on the arts offering actually needed in the junior college may be sensed from a supplementary study made of the work taken during their first two years by two hundred students in the College of Science, Literature, and the Arts of the University of Minnesota who were selected at random. These students pursued courses extending over a range of 714 semester hours<sup>7</sup> of different courses. Of this range of work more than one half (about 361 semester hours) was in courses taken by 2 per cent or less of the students. This leaves less than one half (about 353 semester hours) which was taken with greater frequency. The significance of all this is in the fact that if the courses taken by the 2 per cent or less of the students had not been made available to them as freshmen or sophomores, the curricular service to the group as a whole would have suffered little, if any, serious restriction. Moreover, the offering made available to these students in the University of Minnesota is much wider than is typical of colleges generally.

On the basis of the analysis and the courses found to be offered most frequently in colleges of arts the writer proposed, at the time the work was first completed, a justifiable minimum offering in junior colleges for the purpose in question (solving the immediate curriculum problems of the new organization), including courses in English and public speaking, foreign language, mathematics, science, the

<sup>7</sup> The unit of credit in the University of Minnesota is the quarter-hour of credit, which is the equivalent of two thirds of a semester hour. To make the report more readily intelligible to those accustomed to the semester plan, the amounts of credit represented have been converted into semester hours.



social subjects, and psychology and philosophy, and totaling 225 semester hours. It was estimated that an offering of this range was warranted for the arts students in a junior-college unit of from 150 to 200 students, the working minimum number found desirable for junior colleges. There was no assumption that this suggested offering would meet all the needs of all junior colleges. On the contrary it was definitely stated that the list was presented not as one to be defended against all other proposals but as one *likely* to meet the legitimate range of needs and interests of liberal-arts students. The actual offering must vary from junior college to junior college as these institutions endeavor to meet the requirements of colleges and universities to which their graduates transfer. Where these graduates transfer exclusively or almost exclusively to a single higher institution (for example, the state university in the state of location of such a junior college), the task is relatively simple, since it means the offering only of courses aimed at being the equivalents of those offered in this institution. For the junior college whose students transfer to a number of different higher institutions the problem of setting up an adequate arts offering and of distributing students among the courses is much more complex. It requires a careful comparative study of the requirements during the first two years of all such higher institutions to which the students are likely to transfer. For those in charge of such a junior college a minimum desirable arts offering worked out after the manner which has been described should be helpful as a point of departure.

Consideration of the immediate curriculum problem of the junior college as it relates to the provision of preprofessional work or the work of the first two years of professional curricula beginning with the first college year may be approached by reporting briefly the results of an analysis of a total of 230 curricula distributed among the eighteen professional fields listed in Table V. These curricula were analyzed as to specific "general" and "special" courses and as to the number of semester hours of course work in these two classifications. Under general courses were grouped most prescribed work in English, foreign language, mathematics through calculus, most courses in the social studies (including only the first course in economics), philosophy and psychology, and all courses in "pure" science. Here were counted also all elective portions of curricula where these may be selected from nonspecial fields. In the second class were placed all such materials in the fields named as bore evidence of being for special groups or were clearly "applied" courses, such as business English, mathematics of investment, agricultural,

chemistry, and educational psychology. Here also were placed all courses in commerce in advance of the first course in economics. By far the larger proportion of special courses, however, was made up of work in such special fields as pharmacy, education, agriculture, home economics, and engineering.

TABLE V.<sup>8</sup> AVERAGE NUMBERS OF SEMESTER-HOURS OF GENERAL AND SPECIAL WORK REQUIRED IN THE TWO YEARS OF PREPROFESSIONAL CURRICULA AND IN THE FIRST TWO YEARS OF PROFESSIONAL CURRICULA

| PROFESSIONS                          | GENERAL COURSES | SPECIAL COURSES |
|--------------------------------------|-----------------|-----------------|
| 1. Law . . . . .                     | 52.8            | 1.0             |
| 2. Medicine . . . . .                | 60.0            | 0.0             |
| 3. Dentistry (two years) . . . . .   | 64.2            | 0.3             |
| 4. Dentistry (one year) . . . . .    | 30.4            | 0.0             |
| 5. Nursing . . . . .                 | 58.2            | 3.6             |
| 6. Pharmacy . . . . .                | 32.4            | 31.2            |
| 7. Education . . . . .               | 58.3            | 2.3             |
| 8. Commerce . . . . .                | 47.1            | 12.6            |
| 9. Journalism . . . . .              | 53.8            | 6.7             |
| 10. Agriculture . . . . .            | 39.1            | 29.0            |
| 11. Forestry . . . . .               | 36.4            | 34.0            |
| 12. Home economics . . . . .         | 40.6            | 23.6            |
| 13. Civil engineering . . . . .      | 44.1            | 23.5            |
| 14. Electrical engineering . . . . . | 45.2            | 23.1            |
| 15. Mechanical engineering . . . . . | 43.9            | 24.4            |
| 16. Chemical engineering . . . . .   | 52.4            | 14.2            |
| 17. Chemistry . . . . .              | 62.8            | 4.5             |
| 18. Mining . . . . .                 | 48.8            | 21.9            |
| 19. Architecture . . . . .           | 33.3            | 33.8            |

Practically without exception what has been classed as general in Table V is comprehended by the minimum liberal-arts offering already referred to as being suggested for junior colleges. This means that all general portions of these preprofessional requirements could be met by an offering of the sort proposed, the residual problem in meeting all the requirements of any particular preprofessional field being that of providing the special content.

It is apparent that in some of these fields, such as law, medicine, dentistry, education, commerce, and chemistry, no serious obstacle would appear to keep the junior college from making all necessary work available. In other fields the offering in the junior college

<sup>8</sup> Table II on page 52 of the author's "The Junior-College Movement" (Ginn and Company, 1925).

would need to go far beyond the arts offering referred to. This would be especially true in such fields as pharmacy, agriculture, forestry, home economics, and the engineering specializations, inclusive of the related lines of mining and architecture. How to meet these curriculum needs constitutes one of the most perplexing of junior-college problems. The universal acceptance of the junior-college idea will make a solution imperative. It is the belief of the writer that this same universal acceptance will make solution possible by providing in junior colleges enrollments large enough to justify offering the work. Moreover, with the more common availability of opportunities of education on the junior-college level it is almost certain that the first two years of curricula in lines requiring considerable special material will move in the direction of more general content, as is already true in the case of the older professions.

It is well to point out again the fact that the description here provided is in terms of typical requirements rather than in terms of variations from the typical. The fact of variation complicates, for those in charge of junior colleges, the task of offering and recommending courses to meet the requirements of a number of different higher institutions. For the junior colleges whose students transfer exclusively or almost exclusively to a single higher institution the task is much simpler. On account of the desirability of freedom of transfer from acceptable junior colleges to any higher institution of merit where advanced preparation for professional work is given, there is need, of course, of a better standardization of curricula in many of the special fields.

There is little occasion at this point to consider the immediate curriculum problem of the junior-college years in the four-year college or university. The only institutions for which it would be important are those a large proportion of whose students transfer to other higher institutions at the end of the first or second college year.

It should hardly be necessary to repeat that the suggestions so far made concerning the junior-college curriculum are for immediate service, in discharging the isthmian obligations of the junior-college unit. They cannot be regarded as elements in a long-time policy of curriculum adjustment on the junior-college level. To develop such a policy it will be necessary to arrive at the purposes of junior-college education in the more comprehensive terms already summarized and now to be extended by corollary.

In reconsidering the purposes of the junior college for use in formulating a curriculum policy for this new institution we may select for our point of departure the published statements concerning such

junior-college divisions as had been instituted in universities up to a few years ago. It has doubtless already been inferred by the reader that this point of departure is especially appropriate in view of the efforts of junior colleges to reproduce the work in these junior-college divisions and in view of the influence of higher institutions on the standardization of junior colleges which are not parts of universities. Usually only persons connected with standard higher institutions have to do with this standardization. It must, however, be admitted that the opportunities for studying the purposes of the junior division are rather restricted, — first, because the number of these divisions in universities is not large (being now, the writer believes, only eight), and, secondly, because there is little in print concerning them. Although faculty committees which consider and recommend the institution of these divisions may be verbose enough in committee session, the reports which are made and accepted are in the form regarded as reproducible in the college catalogue, and the catalogue of the American college is seldom known to indulge itself in expressing the philosophy of the institution. Much of the philosophy to be gleaned from it must be caught by implication from regulations rather than from express statement.

Three of six official bulletins dealing with the junior division which the writer had occasion to examine seem to have aimed at stating its purpose in some way other than to say that it includes the first two years of the college. These three stress at least one function in common, although this is differently expressed in each instance. In Stanford University the aim is "to introduce the student to fundamental fields of human interest"; in the University of California "it is expected that the student . . . will make an effort to establish a basis for that breadth of culture which will give him a realization of the methods and results of some of the more important types of intellectual endeavor, and a mental perspective that will aid him in reaching sound judgment"; and in the University of Washington the aim is "to contribute to a broad general training in preparation for the advanced work of the upper division." The bulletin for the University of Washington goes on to say that the aim of the requirements is "to supplement the work of the high school . . . to secure for the student a knowledge of a wide range of subjects, to distribute his knowledge over the fundamental fields. To this end the high school and college are viewed as essentially a unit."

1. An inference that may be drawn from these quotations is that one purpose of the junior-college division is related to *general education* as contrasted with specialized training. The acceptance of this ob-

jective has the support of opinions frequently expressed concerning the purpose of the junior-college years and of the facts on the trend of reorganization in higher education which were summarized above. The word "general" here has little positive connotation. It tells us merely that the training during this period is to be *unspecialized*. We have need of positive particularization of this large general purpose. This has not been adequately accomplished. There is an approach to unanimity on this score for the high-school years below, with which the junior-college years have been shown to have much in common. Secondary-school aims, as proposed, increasingly include as general elements training for one's civic-social-moral relationships broadly conceived, training for the proper use of leisure, and training for healthful living. There is no reason to believe that these are not just as acceptable for the junior-college years. To accept them and to attempt to realize them on this level would give direction to the curriculum in the junior-college years with respect to this composite purpose of providing general training.

2. A second purpose of the junior division, although proposed neither by direct statement in the bulletins nor in the generalization of purposes of the foregoing section, may be inferred from a recurring type of regulation relating to quali-quantitative standards of work required for advancement from the lower to the upper division within the university. In The University of Chicago the student is advanced to the senior college when he has completed "18 majors of work with at least 32 grade points." Similar to this quali-quantitative requirement is the one in the University of Minnesota which insists on the completion of "90 credits and 90 honor points" for promotion to the senior college. Somewhat different but of the same general import is the requirement in the University of Nebraska which says: "If the sixty hours of work required for the completion of the lower division is not completed in the first five semesters of attendance, the student is automatically dropped from the university unless extension of time be granted by the Senate Scholarship Committee." All these regulations seem intended to operate as scholastic hurdles which must be taken for advancement to the upper unit. Implicit here is what may be referred to as the *selective* purpose of the lower unit.

3. Reference to this purpose of selection for higher levels of training calls to mind by contrast a service not expressed or implicit in the bulletins on the junior division referred to, but one which was set forth in the generalization in the foregoing section. It is, however, a purpose which has large significance for the junior-college curriculum. This is what has been referred to as the *democratizing*

purpose, — the function of adapting the work on this level to the wide range of ability represented among those now knocking for entrance at the doors of institutions offering the work, including many students of less ability than those who formerly sought entrance to our colleges. It will doubtless be observed that the acceptance of this purpose is a direct challenge of the policy of institutions in which a selective barrier is set up for admission to the freshman year. The high school below faces this problem in a more accentuated degree than does the college. Nothing the college or the high school can do will effectively stem the tide; it is heaped up by forces too profound for them to attempt to control. To be sure, the individual college or secondary school may decide to exclude students in this or that portion of the distribution of ability in the schools lower down, but it is thereby merely shifting the burden to other institutions and is, in effect, announcing that it has no concern with the great problem of American education, — the problem of an adequately popularized education. This issue is made to stand out when one recalls that the college in its first two years and the high school are chiefly concerned with *general* education. The problem is a different one at the point where specialization and professional training begin, — typically at about the junior year in college, — since standards for success in these can be more easily and unequivocally established. Who is able to tell us the minimum standard to set for general education? It will not suffice for a popularized general education to establish as standard, as is now done, either the ability to succeed in advanced specialization on the senior-college level or in college work on the junior-college level as this work is now being administered.

This popularization of the last years of our full period of general education, the years represented in the two-year junior college, will call for either the radical modification of subjects and content known to have high selective value or their elimination as universal requirements. This change has been on the way for some time in both the high school and the lower years of the college, but it has made greater headway in the high school.

Discharging this obligation of adapting the work to the ability of the student is in no sense to be regarded as a relinquishment of standards if standards come to be properly defined as insistence that the student work up to the limit of his ability. It does imply, nevertheless, a differentiation of standards for students of different abilities. In this way we shall not be lowering standards for the more capable students now enrolled; in fact, we shall be holding them to a higher quality of performance than is possible without this discrimination.

In proposing this democratizing service of the junior college in the section above, dealing with its purposes, mention was made of training for semiprofessions, that is, for occupations the training for which would be completed on the junior-college level. It has already been stated that, as regards the duration of the full period of preparation, these occupations would lie somewhere between the skilled trades and clerical work below and the indubitable professions above, which now require four or more years of training beyond the high school. We know less than we should about occupations on this semiprofessional level. To be sure, there are already outcroppings to be noted, both of the occupations themselves and of training opportunities in preparation for them. The writer found large numbers of deans and heads of departments in engineering, commerce, and agriculture conceding the place of such occupations. We shall need a great deal of job analysis of occupations before most of them are definitely located and before curricula in preparation for them can be provided in our junior colleges. It may be taken for granted that the problems of planning the terminal general education and the training for semiprofessions are among the largest in the field of the junior-college curriculum, as well as among the most significant. The writer entertains the belief that most of the attempts to solve them will be made in the junior colleges rather than in the first two years, or junior divisions, of colleges and universities. One may hope, however, that those in charge of the latter will be sympathetic with efforts at solution, and will cooperate in these efforts. It is even likely that some may undertake related experiments.

4. There is another purpose to be inferred from some of the statements already quoted from bulletins on junior divisions, a purpose corollary to others that are being reviewed here and one which likewise has large meaning for the curriculum in the junior-college years. Consideration of this purpose may be introduced by re quoting portions of two of the statements appearing in these bulletins on junior divisions of universities. In Stanford University the junior division aims "*to introduce the student to fundamental fields of human interest*"; in the University of California "it is expected that the student . . . will make an effort to establish a basis for that breadth of culture which will *give him a realization of the methods and results of some of the more important types of intellectual endeavor.*"<sup>9</sup>

It seems to the writer that these statements were anticipative of the present movement for *orientation* in the lower years of the higher institutions, — a movement which has been making rather astonish-

<sup>9</sup> The italics are those of the present writer, not of the original bulletins.

ing strides in recent years. Although the objectives of orientation courses may vary from department to department and from institution to institution, they seem always to contain a reference to the kind of service indicated in the statements quoted, to afford the student some acquaintance and contact with certain large subject fields rather than with special and partial aspects of these fields, as has been the too frequent practice in first college courses. Among other values it provides the student a better basis for the selection of specialized and more advanced courses in related fields. It has been found that students often mention this value of such courses. Obviously this is a guidance value, and it likewise has important implications for the junior-college curriculum.

The writer cannot refrain from pointing out, in passing, that the college was not the first of our educational institutions to offer such courses. Junior high schools have made them available over a period of years, although they have been called exploratory, try-out, or general courses rather than orientation courses. As a matter of interest it may be mentioned that members of college faculties can be found who advocate orientation courses in collegè but frown upon the effort to give exploratory or general courses in schools below, although courses of this type may properly be regarded as more valuable on lower levels of training than on upper levels.

It has been indicated that one of the purposes of the junior divisions of universities, to be inferred from the regulations made for their administration, is selection. This is, of course, *one phase of guidance*. Orientation is a constructive addition to this guidance service of the junior-college years. To be democratized to the extent essential to democratized curricula and to the acceptance of the flood of youth now pouring into the early college years, the concept and the service must be correspondingly broadened. Instead of restricting our efforts to *selection* only, we must substitute for it what Suzzallo refers to as *distribution*. In speaking of certain changes taking place in our lower schools he states that a new motive "has transmuted the older and more or less subconscious function of selection and rejection of students into the contemporaneous and quite conscious policy of distributing school attendants more effectively within the complex ramifications of the modern school system." Distribution is so much more in keeping with the spirit of a popularized and democratized education than is selection, that one is easily tempted to use more than the space allotted to a presentation in order to stop and dilate upon it. We cannot take space even to refer to its curricular meaning, any more than has been done through mention of orientation.



Other purposes pregnant with meaning for the junior-college curriculum might be passed in review if space permitted. Those so far discussed may be regarded as illustrating the nature of the major problems represented. Instead of continuing with the list it is desirable to take up briefly, once more, a relationship which, if it is not taken into account, must make any study of curriculum problems in the new unit only partial. This relationship is that of the junior-college years to the high-school years below, — a relationship discussed in the concluding paragraphs of the section dealing with the purposes of the junior college, in which we discussed the overlapping of high-school and college work.

This overlapping makes almost preposterous any consideration of the junior-college curriculum without at the same time taking into account what is going forward or should go forward in the high-school years. In fact, it becomes increasingly apparent that the curriculum of the whole period must be considered as a unit and worked out as such, and that we are merely temporizing when we try to map out a training program for the two junior-college years alone.

It is partly a consciousness of the essential unity of the curriculum problem on the two levels that has led to the advocacy of the *integration* of the junior college and the upper years of the high school, and to the proposal for a redistribution of years in the school system so as to encourage this integration. Out of this has come the specific advocacy, by some, of what is referred to as the "six-four-four" organization of public education, with six years in the elementary school, four years instead of three in the junior high school, and four years in the combined senior high school and junior college. Examples of this organization are already appearing, and the establishment of others is under consideration. Whatever may be the actual distribution of years among the several units of the school system, it seems desirable to integrate junior-college and high-school work in some way for the sake of proper curriculum development.

Efforts at such curriculum integration are more likely to be attended by success where all the years of work are under single rather than separate control, as is the case in public-school systems extending through the junior-college years. One may judge from the rate of development reported at the beginning of this article that this promises in time to be the dominant place of provision of the work on the present junior-college level. Obstacles to integration will be greatest where the work is given in institutions without official obligations to each other, as in public high schools and in colleges and universities. Here, where the tradition has been one of separation,

extraordinary efforts will need to be made on coöperative enterprises aiming at curriculum integration.

It is too early to make predictions concerning the exact nature, organization, and content of the curriculum of the junior college of the future. The whole movement is still so new that we have had little experience with it and have therefore made few investigational excursions into the curriculum problems involved. Now that we have the units in operation, it should be possible to begin to carry on experimental studies that will afford a better basis both of practice and of prediction. Projects similar to those being carried on in the laboratory schools in the School of Education of the University of Chicago, in Stephens College in Missouri (where the effort is made to set up a junior-college curriculum with the present third high-school year as the first college year, which is given over largely to a program of orientation courses), and in the Pasadena High School and Junior College must be extended to other institutions.

At the same time it seems possible, even in these early stages of the movement, to descry the larger forces that will determine the general outlines of the development. It seems certain that we shall need in time to forsake the mere reproduction, in the junior college, of the courses and curriculums now being given in the first two years of colleges and universities. Doubtless junior colleges will continue to afford opportunities to round out general education and to pursue preprofessional curriculums, but the scope of their functions will extend beyond this relatively restricted service. Just as the high schools below are tending to do, junior colleges will serve better and better the needs of a much larger proportion of youth than those merely who are to proceed to the higher levels of training. More than this, the entire program of training in the junior-college years, both of those who will continue in college and of those who will not, will be knit up with the work of the school years below, of which it seems logically a part.

#### ADDITIONAL PROBLEMS OF THE JUNIOR COLLEGE

There is no assumption that all possible issues relating to the junior college are comprehended by the treatment in the foregoing sections of the chapter, which have been concerned, respectively, with the recent growth and present status, the purposes, and the curriculum of the institution. There are, to be sure, a host of additional unsolved problems, since no institution so new could have progressed far toward the solution of the wide variety of problems with which every

school is faced. Among those concerning which little or nothing has been said in the chapter are problems relating to organization, housing and equipment, teaching and administrative staff, location and maintenance of junior-college units, and entrance requirements.<sup>10</sup> The only aspect of the organizational problem that has been considered is the need of effecting the integration of junior-college with high-school years. Too little attention has been given, in writings on the junior college, to important issues relating to material aspects, that is, to provisions for space, laboratory equipment, libraries, and the like. The great importance to any educational institution of an instructional and administrative staff adequate in all essential respects need not be argued. Too little attention has been given to questions of where and how best to locate junior colleges in order best to serve the potential student body, while questions of financial resources and expenditures are in some respects still even to be raised, to say nothing of having been answered.

Because it is a subject that will be dealt with in other chapters in considering the other types of education with which this book is concerned, it seems desirable to address a word to the problem of entrance requirements to the junior college. In this connection the first practices that come to mind are the traditional ones of requiring fifteen or sixteen units of work, or graduation from high school, or both. These were in effect the practices which standardizing agencies demanded during the earlier stages in the development of the junior college. It is probably to be conceded that these practices are as necessary to be followed for junior divisions of universities as for types of higher institutions such as four-year colleges not being administered in two divisions, that is, junior and senior divisions. There has been some movement away from it, however, where junior colleges which are parts of city school systems maintained in association with high schools are concerned. Even standards for junior colleges applied by certain of the standardizing agencies like state universities and regional associations have looked with favor on a modification of the usual college-entrance requirements along this line, at least to the extent of permitting students with fourteen units of credit to be registered in specific college courses for which they have the necessary prerequisites. This practice is permitted so as to bring about a better articulation of the high school and junior college

<sup>10</sup> Most of these matters are dealt with in the author's "The Junior-College Movement" (Ginn and Company, 1925) and "The Junior College" (University of Minnesota Press, 1924).

as now administered, and at the same time to make it possible for the student to progress consistently in his school career.

Another basis of admission sometimes used has to do with the *quality* of work done by the candidate in his high-school work below, as when the high-school graduate must offer for admission to the junior college or for admission to certain curricula in the junior college a specified minimum number of high-school units in which he received marks of A or B, or when his average mark should place him in the upper two thirds of his high-school graduating class. A variant of the former plan is followed in certain junior colleges in California in which two curricula are made available, — one for those having the minimum number of "recommended units" (with marks of A or B) leading to the "junior certificate" admitting to the upper division of the University of California or other institution, and the other for those not having this minimum number and leading to the "junior diploma," which does not carry this privilege. This arrangement is sometimes accompanied by the opportunity to transfer, during attendance in the junior college, from the "diploma" to the "certificate" status after the attainment of a specified minimum quality of work.

After the desirable integration of the first two college years in junior colleges associated with the high-school years below has been achieved, as in the plan now frequently proposed, and sometimes put in operation, of developing a senior unit including the last two years of the high school and the junior-college years, even greater freedom than that just referred to will be appropriate. When this integration is consummated, the same latitude in this regard will be desirable as now obtains within effectively administered four-year high schools or four-year colleges. These do not now allow indiscriminate selection by fourth-year students of courses ordinarily taken by first-year students, or by first-year students of courses typically pursued only by third-year and fourth-year students. Similar safeguards may well be put in operation in the integrated senior unit of the new secondary school, but they will not proscribe, as conventional standards now do, the taking of courses typically available for students in the thirteenth grade by students in the grade immediately below. Differences between students one or two grades apart in classification will not warrant such a rigid administration of courses.

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## CHAPTER II

### THE COLLEGE OF LIBERAL ARTS

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#### THE COLLEGE NOT INDEPENDENT

The college is not independent; it belongs to the university organization. Whether it be the hand or the heart of the university, its relation to the whole enterprise of the education of later adolescence is intimate and organic. Its graduates, like those of the professional schools, must earn a living, and this consideration has a profound influence upon the departments within the college whether these be nascent professional schools or not. Moreover, graduates of professional schools are in need of that liberal education which raises them from the status of professional men to men with a profession. Then, too, university administrators usually place in the college those fundamental service subjects that the professional schools require students to master before beginning the technical courses, in which training is given for the occupations.

Nor is the curriculum of the so-called small college which has developed no professional schools, independent of these influences. Continuous vocational pressure is being exerted to expand this department or that to meet professional needs. Departments of economics tend to become anonymous colleges of commerce, and departments of English sometimes develop courses which are schools of journalism in all but name. Courses in the junior college are so constructed that those who later enter schools of law or medicine will "lose no time." Everywhere the college is a part of a larger educational agency whose function is to prepare its students for life.

An analysis of what is included in preparation for life is simplified if two phases of life are considered separately: professional life and extraprofessional life. The typical American youth follows a vocation. He who does not fails to enjoy the respect of his fellows. In our times the mere possession of wealth does not excuse a young man from being a producer, and increasingly young women are required by public

opinion, as well as by their own desires, to do something "useful," if only temporarily between the time of graduation from college and entrance upon the occupation of home-making. Consequently it would seem that any system of higher education which prepares for American life must provide for professional training.

But, on the contrary, it is equally clear that mere vocational instruction is not a complete preparation. All men and women necessarily have some obligations and responsibilities outside their vocations and largely independent of them. Parenthood, friendship, citizenship, and recreation are extraprofessional duties, — interests or avocations which are necessary for a full life, and which in one form or another are common to all, no matter what the vocation may be. Moreover, we believe that the wider these interests are, within reasonable limits, the more satisfactory the total life experience of the individual will be.

#### TASK OF PROFESSIONAL SCHOOLS

To the professional school is delegated the task of preparing for vocations, and to the college is given the responsibility of preparing for extravocational life. If we consider these as separate functions, the problems of the college curriculum are measurably clarified.

The task of preparing a curriculum for professional schools is in theory comparatively simple of statement. The curriculum-builder needs first to know the activities of the profession and the traits of character most essential for persons who follow it. When these have been analyzed he collects the expert methods of performing these activities, and follows this by selecting those facts and principles found in the fundamental service subjects which are necessary to illuminate the collected methods or to explain why they operate successfully. While the material is being organized due provision is made for the development of professional traits of character and personality. Then this raw material is organized into teaching units as subjects or courses, and arranged in the form of professional curricula.

This procedure in constructing a professional curriculum exerts an influence upon the college curriculum at three points.

In the first place, it is clear that a practical and concrete analysis of the activities (mental, emotional, æsthetic, moral, and physical) of the members of the vocations reveals a more or less common body of activities which are extravocational; and in our statement of the function of the college we have assumed that these are matters with which the college will deal. Of this, however, more will be said later.



The second point of contact is often a point of conflict. We have just said that in building a professional curriculum educators currently depend upon certain fundamental subjects, such as chemistry, English composition, and zoölogy, for facts and principles necessary to the intelligent mastery of the techniques of the profession. Quite clearly these subjects logically belong to the professional curriculum, since they contribute directly to the learning of professional procedures; but for administrative reasons they are often placed in a college curriculum.

When this occurs two points of view frequently clash. The profession insists that the materials included in the fundamental subject courses that are to be taught to its students are secondary to, and derived from, vocational needs,— that in the strictest meaning of the term they are service courses. Proceeding upon this assumption, the profession insists that the content of the subject and the applications of the principles should be fitted to the needs of the vocation. Further, the profession points to the fact that when this is not done the student learns much that is vocationally useless, with the result that, recognizing this lack of practical value of the content, he fails to react with interest and profit.

On the contrary, the subject faculties in the college take the position, not entirely sound as judged by an examination of current elementary texts, that there is a standard body of knowledge relating to each subject which the student should master, so that in the end he may then proceed to make his own applications (preferably with the guidance of the faculty of the professional schools) as these applications occur in the technical subjects of the profession. In addition they make the assertion that if the materials of the subject course were selected as the professional men request, the course itself would be attenuated to such a degree that it would have little substance and no standing as a subject course. How great the attenuation is we do not know in general, but in pharmacy we find both extremes. On a service basis pharmaceutical Latin is reduced to ninety-three Latin terms and a half-dozen rules; pharmaceutical chemistry, however, is more comprehensive in content than the usual freshman chemistry course in a college. It is further claimed by the college that certain social and personal advantages are gained from the intermingling of students of the different professions in the same college classes. This claim is, however, of slight weight as an argument against segregating professional students in service courses if these students are associated generally on the campus outside of class and take extravocational courses together.

A sensible solution to the problem is, however, easily reached. A committee of three — one a member of the subject department, one a member of the professional faculty, and the third a representative of the administration — can be appointed. The special qualifications for membership are open-mindedness and a desire to coöperate. Then the professional representative collects the applications of the subject to the profession, and the subject representative organizes them around the appropriate principles of the course as illustrations of principles. The service courses for each profession are then taught to segregated groups by teachers who have mastered the applications of the subjects to the profession to the point where they can use them as illustrations. This solution is so simple that it has rarely been tried.

A third point of contact is likewise a point of conflict. While it is not so articulate as that which rages in the foregoing situation, it is equally serious. This is the conflict between schools of education and the college in connection with preparing students to teach in the high school. The school of education makes two claims: (1) the typical high-school teacher teaches at least three subjects, and therefore normally requires preparation in three fields; (2) the amount of information necessary to teach a subject in the high school with practical success is probably not so great as that required for a major for the bachelor's degree. It is acknowledged that if a teacher taught only one subject there would be less necessity for preparation in several subjects. But clearly the practical conditions of the present teaching situation demand that the students expecting to be teachers shall have organized for them courses in the academic subjects the function of which is directly determined by the needs of the vocation. The college faculty insists that mastery of a subject by a student as shown by the completion of a minimum of a major is essential for academic respectability, and it is not inclined to modify its courses and requirements to meet the needs of the teaching profession under the conditions which prevail. Here again we suggest the formation of a coöperating committee as an alternative to be explored before instruction in the academic subjects necessary for the training of teachers is (unfortunately, we think) placed under the administration of the school of education. In both these cases the professions have claims which cannot fairly be ignored or wisely neglected by the college so long as it continues to give instruction in courses fundamental to the professions.

In its own field — instruction for extravocational life — its authority, however, is paramount, and this we shall now proceed to consider.

## SELECTION OF MATERIALS FOR COLLEGE CURRICULUM

The most vital and debatable problem of the college curriculum is the selection of materials of instruction. The liberal-arts college has an embarrassment of riches. For generations, man has been adding to the processes and products of civilization. Facts, principles, pictures, operas, customs, and institutions are being produced, evolved, and revolutionized with increasing frequency in the present generation. A growing list of the masterpieces of the fathers is being transmitted for absorption. Some of this material is vocational, and as such need not be discussed in this connection; but most of it deals with the fundamental needs, instincts, interests, and problems which lie outside the professions, and with this the college is concerned. The quantity of the materials available for impartation is so great that no four-year curriculum can possibly hope to include more than a fraction of it within its limits.

*Elective basis.* One basis for selection which is being decreasingly used is the individual interests of the students. This is known as the free elective system. It is based upon the assumption that students learn more fruitfully those courses in which they are interested, and also upon the further assumption that since the development of mental ability is the aim of college education, the courses which a student pursues make little essential difference. This system originated in America at the University of Virginia in the early nineteenth century and was popularized by Harvard University during the latter half of the same century. It has had, however, to meet two pressing criticisms which between them have led to the almost complete abandonment of unlimited election. The first criticism is directed against the second assumption mentioned above. Scientific studies have shown that the transfer of abilities developed in one subject to another subject or to life is neither so certain nor so widespread that it can be accepted as a basis for the indiscriminate choice of subjects. The second criticism is presented by those who believe that there are certain fundamentals of human civilization with which every college student should be acquainted; and it is maintained that the student, when left to his own choice, will not certainly select these. This has led to the practice of supplementing electives with what is known in college departments as constants or required subjects. Consequently, at the present time we find that the typical American college curriculum includes both constants and electives.

*Constant basis.* Those who believe in constants as a requirement for graduation from college have held almost entirely to the plan of

sampling the fields of knowledge. The theory is essentially this: An educated man as defined by college graduation should have some acquaintance with all the great fields of knowledge. When this theory is used as a basis the fields of knowledge are usually divided into five or six groups: English composition, physical science, biological science, social science, mathematics, and foreign languages. Within each of these groups are included certain departments; for example, the physical-science group is made up of physics, chemistry, and geology. With the divisions marked off in this manner the student in the typical college is required to select a beginning course in some one of the departments of each group. He may, for instance, take English composition, freshman physics, freshman zoölogy, American history, college algebra, and beginning Spanish.

This plan fulfills the letter of the theory. If we grant that these are the six great groups of knowledge, and that the beginning course in some one corner of one field may be interpreted as acquaintance with the whole group, the matter is settled. But it cannot be maintained that six such discrete courses give any satisfying picture of our social heritage, and this is a particularly serious objection in view of the admitted fact that the beginning course seldom gives a comprehensive view of the single field to which it is an introduction. This plan no more gives a picture of the accomplishments of man than does a study of single counties in New England, the Middle Atlantic States, the North Central States, and so forth, give a bird's-eye view of American civilization.

*Orientation basis.* In recognition of this weakness, which is inherent in this sampling of knowledge, there has grown rapidly during the last decade a movement looking to the requirement of overview, or orientation, courses. The underlying idea of the orientation course is this: The student throughout high school and college is engaged almost constantly in studying detailed sections of knowledge,—algebra, high-school physics, history of art, cooking, American literature, and so forth. Nowhere does he obtain a comprehensive picture of human civilization. Consequently, assuming that an overview is a means of giving an adequate picture of the great fields of knowledge, college faculties have prepared what are currently known as orientation courses. A number of such have been published in the social and physical sciences, and others are being prepared in æsthetics. General courses in mathematics have been given in colleges for a number of years.

One of the important problems in such courses is the selection of principles upon which to organize them. For instance, one course might seek to show man's conquest of nature and in consequence

treat the great discoveries of the ages; another might emphasize the romance of knowledge and lay stress upon the spectacular products of the game of thinking; and still another might be interested in delineating the services of the fields of knowledge in furthering modern human welfare. No one of these points of view, however, has yet reached a dominating position.

The functions of such courses are three in number. In the first place, as the title indicates, they help the college freshman to orient himself in the world of knowledge when he is beginning his college course and is bewildered by the hundreds of courses that claim his interest. In the second place, they serve as an *apéritif*; the student learns of the possibilities of further work in a wide range of departments, and his appetite is whetted. In this sense they constitute equipment for educational guidance. In the third place, when orientation courses are adequately prepared they give just the overview of which we have spoken. The builders of these courses "splash at a ten-league canvas with brushes of comet's hair," and the students secure the satisfying picture of the grandeur of human genius. In preparation for seeing life steadily they on this occasion see it whole.

These two methods of determining the constants of the curriculum deal explicitly with the subject matter of the fields of knowledge, and only implicitly with preparation for life. They both assume that such materials as are evolved by their use will be valuable at least as background for the college graduate, but they utilize no clear or definite picture of just what usefulness consists of, or even in a general way what are the major outlines of the activities of life.

*Analysis of life activities.* It will be interesting, therefore, to present the constants of a curriculum which leads into the fields of knowledge through an analysis of life activities. The first step in such a procedure is to analyze the activities (mental, æsthetic, physical, and so forth) of men and women which are extraprofessional; and then, when these have been analyzed and classified, those great fields of activities which are common to all college graduates, irrespective of vocation, become the constants of the college course.

Such an analysis has been made for the curriculum of a woman's college. It was found that the activities common to all college graduates irrespective of vocation, and at the same time subject to training, might be divided into seven groups, as follows: communication; the maintenance of physical health; the preservation of mental health; æsthetic appreciation; participation in social, economic, and political activities; the integration of personality; and the art of consumption. This does not include child-training, because it is not

an extravocational activity of unmarried women. Upon such a basis the constants in a curriculum for a woman's college would be English composition; physiology, hygiene, and physical education; psychology; a general course in æsthetic appreciation; a general social-science course for the woman citizen; an integrating course in philosophy, religion, and ethics to give a life point of view; and a course in consumption to instruct women how on the financial side to buy intelligently and on the spiritual side to get the highest quality of satisfaction from expended effort.

Undoubtedly the extracurricular activities of men do not differ essentially in title, although a companion analysis has not been made of the extraprofessional activities of male college graduates.

Such a group of constants would appropriate from the materials handed down from the past those which bear directly upon the intimate problems and activities of American life as the college graduate will encounter them. Nothing in these courses would be useless in the strictest sense of the word. To such required courses, however, could be added those required orientation courses which give a unified view of racial inheritance; and, obviously, to them would be added a wide range of electives to care for individual interests. Some could be cared for in the high-school period, others in the junior college, and the remainder in the senior college or the professional-school period.

#### ACQUAINTANCE WITH OR MASTERY OF KNOWLEDGE

The college, however, is faced with still other problems in its task of preparation for life. The aim of the college may be to give the student either acquaintance with knowledge or mastery of knowledge. In some cases the student may select forty three-hour courses in many widely separated departments, let us say, and thereby acquire only a smattering of knowledge; or he may be required to carry a sufficient number of courses in one department to secure a mastery of that field. College faculties who are not committed to free election feel so strongly that scholarship is essential, that two types of machinery have been developed to care for mastery of a single field. One of these is known as the major. The American college typically requires for graduation a major in some one field, or in very closely related fields, of from twenty-four to thirty semester hours, and in many cases colleges require in addition one or two minors of approximately twelve hours each. This procedure is so common that further description is not necessary. The second interesting type of machinery, which is now installed in a few colleges and is discussed everywhere, is the

honors system. This plan, with many specific modifications, in general allows the student to select in his junior year an honors subject in which to specialize during his last two years in college. The student is assigned to an instructor as adviser, and under guidance takes whatever courses and attends whatever classes will best fit him for a competent mastery of the selected field. Independence of effort, scholarship, and the research attitude are the traits which such a system seeks to develop. Without these objectives the plan will not differ from the conventional requirements for the major for graduation. This system, which has been borrowed from the English universities, and which has also been in use in Canada for a century, is distinctly in the experimental stage in the United States.

If the honors system is right in principle, as it seems to be, it may be developed into a very interesting suggestion. The proposal we have in mind is this: Let us vocationalize the college. At the appropriate time, when the extravocational activities and the orientation courses have been cared for (at the end of the junior college, let us say), each student would be expected to select a profession. These professions would lead in two directions, — one to the professional schools and the other into and through the graduate school. Those who enter the standard professional schools would be cared for by those agencies. Those who wish to become research workers and investigators in the fundamental subjects, such as physics, history, and French, would take the honors course in the subjects of their choice in the two senior years of the college. Each student would thus begin in his junior year to become a research worker in some one department, and upon graduation he would be able either to enter into some research organization in these fields in a minor capacity or to continue training in the graduate school until he was able to become an investigator. In this way all the fields of production not covered by the professional schools would be cared for by the college; and any student who did not possess the mental ability or the interest in production to enter a professional school or the honors courses would be considered unqualified for continuance in institutions of higher education. He would have received from his orientation courses and his activity constants enough education to prepare him for extravocational life as a layman; and if he had no interest in scholarly pursuits beyond that point, it is doubtful whether additional training would repay the effort and money spent upon him.

Superficially such a plan may seem to destroy the hope for a liberal education, but a résumé of the student's training in such a college shows that the fear is fancied. Actually the student is required to

cover the orientation courses prepared to give him an overview of human civilization, and to take the activity constants which will fit him directly for extravocational life. Then, when he has entered his honors course, by whatever name it may be designated, he will in all likelihood find it necessary to take a number of auxiliary courses in other fields. With all these contacts the curriculum through which he would work would be both liberal and practical. Of liberal culture he would have acquaintance with the outlines of civilization and with the applications of the discoveries of man to his cultural life. He would thus have secured a liberal education and would also be on his way to useful production in the basic arts and sciences.

The placing of activity constants and orientation courses in the sixteen years from the first grade to the bachelor's degree is a matter for experimentation. Conceivably the orientation courses could be given in the eleventh and twelfth years of the high school; certainly some of the activity constants belong to the high school. English composition should be mastered in the high school, and health habits should be automatized before the student enters college. On the contrary, the integration course will be the richer the longer it is delayed. The whole question of sequence and gradation is waiting for scientific investigation.

#### DEVELOPMENT OF CHARACTER AND PERSONALITY

In all problems of the college curriculum the development of traits of character and personality has to be taken into account. The public hopes that our youth will graduate from college with increased information, to be sure, but particularly with enriched personalities. It expects that they will be more intellectual, more resourceful, possessed of greater confidence, and displaying greater sympathy as compared with their status in these respects before they entered college. In short, they will have gained liberality of mind. And college faculties share with the public the hope that the students will improve under tuition. Critics of the college center their objections around the assertion that the liberal-arts college and, to a less degree, the professional schools are developing quite undesirable traits, such as laziness, cynicism, and certain kinds of immorality. The mere fact that the public, the faculties, and the critics lay so much emphasis upon the influence of college on character is evidence that character education is a central problem of the college curriculum.

Just what traits of character should be developed has not been definitely determined by anyone. Obviously, a task of educational



research is to determine the qualities possessed by successful people in conducting their extraprofessional activities; but no one has done this. However, a few qualities commonly included in discussions of the question are the following: love of scholarship, open-mindedness, ability to think clearly, courtesy, sympathy, industry, ambition, and forcefulness.

These traits affect the college curriculum in two ways: Through indirect instruction the student is brought in touch with material, exercises, and standards which tend to develop these traits. The instructor of each course sets up the traits which he will require the students to develop, and correspondingly provides the necessary materials of instruction. The responsibility of the curriculum is to provide such materials, and the duty of the instructor is to make certain that the traits are actually developed.

Through direct instruction, courses in applied ethics may be offered. Herein the nature of moral ends and the methods of developing traits of personality are considered both in theory and in laboratory, field, and practice exercises through which students may seek to improve their weaknesses of character and personality. This is material which can well be utilized by personnel departments or by those departments of ethics which have a desire to give instruction in practical as well as in theoretical ethics. Direct instruction of this type is a possibility; it has not yet reached the experimental stage in any national sense.

In the indirect training of character extracurricular activities have an important place. It is a truism of trait development that the training must be specific: the traits must be applied to a wide variety of situations; mere generalizations do not effectively affect character. For this purpose extracurricular activities provide types of situations in college which cannot be secured in the classroom. Specifically, coöperation, leadership, personal forcefulness, and like qualities that are developed from contacts in unified groups can most adequately be developed in these extracurricular situations. Indeed, the possibilities of these activities for character instruction are so great that they should be considered essentially, if not formally, to belong to the curriculum, and every care should be taken by the faculty to see that they are used to their fullest extent for the purpose of developing worthy traits. Their uses for prestige-building and financial profit are secondary in importance when they are not positively harmful. Extracurricular activities belong to the college curriculum, even though their administration be in the hands of students. Since they are a part of the curriculum, the faculty of the college has the responsibility

of seeing that their content, materials, and skills are so organized as to serve educational ends.

Casual reference has been made to the junior college, — a structural unit which has been widely discussed and developed during the last three or four decades. We have not dwelt upon this unit because it is an administrative device quite subordinate to the principles discussed in this chapter. It does not matter whether or not we have a junior-college organization, provided the faculty of the college will offer service courses, activity constants, and orientation courses from the extra-subject point of view. If obdurate faculties insist upon teaching each course with the purpose of preparing the student for taking other courses in the same field, and view human civilization entirely from the specialist's point of view, then administratively it will become necessary to make an artificial horizontal division within the college and place in the junior college the orientation courses, the activity constants, and the service courses under a separate faculty of scholarly men selected because they can see beyond subjects to their social contribution rather than confine their attention within the boundaries of the subject. Many thoughtful administrators feel that the junior college is the only practical way out of the present impasse.

### SUMMARY

We have reached the conclusion that while the professional school and the college are related parts of an organic agency, the college prepares for extravocational life. As a side issue it currently cares for certain service subjects in the professional curricula. In this capacity it is an intelligent servant of the professional schools and provides the kind of courses they need. In the college, where students are prepared for extravocational life, the crucial problem is the selection of material from the unwieldy culture of the race. Several bases are in use: free election permits the student to make his own choice; sampled constants give a student an acquaintance with fragmentary units scattered through the great fields of knowledge; orientation courses summarize the brilliant achievements of the race and organize them to bring out salient human qualities; and activity constants provide for those extraprofessional activities common to men and women irrespective of vocation. To secure mastery of knowledge rather than acquaintance with a smattering of knowledge, majors and honors courses have been provided; and to the writer it seems that the honors courses point the way out through the vocationalizing of the college for those observers who wonder whether or not the college is going to survive.

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of seeing that their content, materials, and skills are so organized as to serve educational ends.

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In a consideration of college-curriculum problems the development of character is of primary importance, because materials, at least, must be provided for indirect instruction in the development of traits. Probably there is also a place for direct training in the field. Because of their unusual richness for character development, extracurricular activities should functionally belong to the college curriculum and should be under the constructive and active control of the college faculty, which, in delegating administration, supervises and inspects the activities with a view to seeing that they fulfill their primary function.

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## CHAPTER III

### THE SCHOOL OF AGRICULTURE

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#### THE BEGINNING OF AGRICULTURAL EDUCATION BY THE STATE

The Morrill Act of 1862, commonly called the Land-Grant Act, marked the beginning of a new era in the American system of higher education. Before this time the state institutions and private colleges modeled after the earlier institutions were largely classical, and therefore the teachers trained in these institutions had no opportunity to obtain preparation for teaching agriculture and the closely related sciences which occupy places of so great importance in our agricultural-college curricula. Under these conditions the agricultural colleges of the earlier period had few teachers prepared for such work. The Land-Grant Act provided for

... the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.

While the provisions of this act indicate a notable departure from the traditional and aristocratic conception of education of the earlier days, they are not restrictive in the sense of narrowing the type of education sponsored. On the other hand, it is evident that they have fostered the broad educational development of these institutions during the succeeding years. Subsequent acts of the national Congress have been influential factors in developing and extending the services of the land-grant colleges, by means of scientific investigation and through the extension service, to large numbers of people in each of the states.

The past fifteen or twenty years have witnessed a rapid spread of influence of these institutions in the educational system of the United

\* Deceased April, 1929.

States. The demand for a broader development of the scientific, economic, and social phases of education has exerted a marked influence on the character of education promoted by the land-grant colleges.

When these colleges were first established it was generally supposed that they would suffice for all the instruction in agriculture that it was worth while to give in schools. There was also at that time an almost entire absence of public high schools which were available to farm youth. These conditions made it necessary either to admit students directly from the elementary schools or to form preparatory classes in the colleges. While preparatory departments have gone out of these colleges, and their entrance requirements for the degree courses have generally been raised to the standard grade of at least fourteen units, still they have felt obliged to keep their doors wide open to their farm constituency. Hence short courses varying in length from a few days to two or even three years have quite generally been offered, and students have been admitted to these courses without passing entrance examinations. These courses have usually been strictly vocational and have been especially suited for mature persons already engaged in agricultural pursuits.

The agricultural colleges differ from other colleges in having peculiar functions of research and extension work under Federal and state legislation. Thus they are obligated to maintain highly specialized and broadly organized agricultural experiment stations as regular departments intertwined with those for instruction, an equally specialized and interrelated extension organization with large staffs of specialists at the colleges, and college officers residing and working in the several counties.

In this way the college is dealing personally and otherwise with great masses of the farming population. This enterprise is also unique in that it involves close coöperation in planning and operating among the college, the Federal Department of Agriculture, and county and local organizations of various kinds. These large research and extension functions undoubtedly affect broadly the objectives of the agricultural colleges as well as their curricula and methods of teaching.

The American system of higher agricultural education is based on the principle that cultural and vocational elements should be combined in undergraduate college curricula for students pursuing agricultural courses, and that a broad foundation should be laid for specialized work in junior and senior years and in graduate courses.

In other words, the college student taking agriculture as a major subject should also have a broad training both in the sciences related to agriculture and in the humanities, particularly English, history,



civics, economics, and sociology. Thus at graduation he will in a general way be on a parity with his classmates in culture and in preparation for social leadership, and at the same time will have considerable scientific and vocational knowledge of agriculture as a basis for farming or other pursuit relating to agriculture.

In accordance with this principle higher agricultural education in this country is for the most part given in the land-grant institutions. These are either universities or broadly organized colleges in which much attention is given to the natural sciences and the humanities, and in which home economics and many branches of mechanic arts are taught along with agriculture.

In these institutions agriculture is broadly considered to include plant production (embracing agronomy, horticulture, and forestry), animal production, agricultural technology (especially dairying), agricultural engineering, and rural economics and sociology. The training of teachers of agriculture is definitely provided for in departments of agricultural education. Plant pathology, veterinary medicine, and economic entomology are also broadly considered in their agricultural relations, as well as those branches of natural science (especially chemistry, physics, geology, and biology) which deal in definite ways with agricultural problems.

The agricultural colleges or divisions of the land-grant institutions are therefore organized to give vocational training in a wide range of agricultural subjects and interrelated sciences. Their objectives are widely diversified, and their graduates as a body receive training which fits them for entrance upon any one of more than one hundred and fifty occupations. Their individual qualification for the pursuit of any one of these occupations will in large measure depend on the major interest which they have taken and the success which they have attained in undergraduate or graduate courses in a particular field.

### OBJECTIVES

There is some difference of opinion among individual educators, as well as among the colleges themselves, as to what should be the definite aims or objectives of college courses in agriculture. This is due in some measure to the broad field of subject matter which the colleges are compelled to cover in their programs of work. One leading authority on agricultural education says that college courses in agriculture are planned not for the purpose of preparing farmers, but to give young people a college course through agricultural subjects, the value of which is derived from the utilization of the material of daily life for

educational purposes, and that this vitalizes the college curriculum. Another authority, while accepting this statement as worth while, lays major emphasis on the training of scientific and practical farmers as the primary aim of the college course in agriculture. Some of the agricultural colleges state that the purpose of the instructional work in agriculture is to prepare leaders in agricultural activities whether in research, scientific education, administrative activities, or practical and scientific farming.

Practically the aim of the agricultural-college education should not be considered from a narrow point of view. With the broad field of subject matter involved in the curricula of the land-grant colleges, there can be no single aim or objective of a college course in agriculture if it is to meet the varied needs of the students or fully to utilize the public funds which maintain these institutions. Broadly speaking, there should be as many objectives in the agricultural-college curricula as are needed to cover the field which this sort of education is endeavoring to serve.

If higher education in agriculture is to function as it should, however, there are certain major objectives which must have chief consideration in the programs of work laid out by the institutions. Without enumerating all the objectives of a college course in agriculture we may therefore classify and discuss them under the following heads:

1. Training for practical farming or other agricultural pursuit on a scientific basis. Students should have ample opportunity to prepare for such work, and certain courses should be organized with this aim in view. This will include preparation for general farming or for specialized work in seed-growing, horticulture, forestry, animal husbandry, dairying, etc.
2. Training for research in the various branches of agriculture and related sciences.
3. Training of teachers of agriculture and related sciences in colleges and secondary schools, and of agricultural-extension agents and specialists.
4. Training for leadership in the various vocations related directly or indirectly to rural life, and in business pursuits related to agriculture.

### *Training for Farming or Special Forms of Agriculture*

In a country as large as the United States, with a great variety of climates, soils, and agricultural products, the subject matter relating to agriculture which may properly be taught in college will necessarily be determined to a considerable extent by the environment of the institution. The amount and character of the farm operations that

should be practiced in connection with a college course will depend largely on the character of the particular agricultural industry to which the student is giving attention. As a rule, the college will presume that the student of general farming is practically acquainted with ordinary farm operations. The student from the country will, in most cases, have lived on a farm. The student from the city will be expected to acquire a knowledge of these operations and skill in their performance by working on a farm for a time before coming to college or during the summer vacations. Thus far the colleges have not worked out any uniform plans or requirements with reference to such practice.

The student of farming cannot expect to acquire in college the ordinary skills which are required for the successful operation of a farm. The college course will give him the principles underlying farm practice, and the scientific and economic knowledge which will be useful to him in the conduct of farm operations and the management of farm enterprises. The field and barn work of college students will consist chiefly of practicums of laboratory character. These may impart skill in particular operations which have a scientific basis, such as seed selection, crossing of varieties, stock-judging, cow-testing, and milk separation.

Training in practice may be carried somewhat further in the case of special branches of agriculture. For example, in vegetable or seed-growing or floriculture there may be a relatively large amount of practice in plant propagation or greenhouse work; in pomology such things as grafting, spraying, and other measures for the prevention or control of plant diseases or insect pests may be practiced; in poultry-raising the whole round of operations, from the choice of the fowls to the storage of the eggs or the care of mature birds, may be followed out in the student's practice; in dairying all the processes of the handling of milk and the manufacture of butter, cheese, and ice cream may be included in the student's practice.

The undergraduate courses in general or specialized agriculture should not, however, give so much time to the acquisition of skills that the teaching of the underlying principles will be unduly minimized or the economic and social training of the student neglected.

Until quite recently the college courses in the agricultural subjects dealt almost entirely with the problems of production. The unfortunate results of this system are now quite apparent. The colleges are therefore passing through a period of experimentation in the readjustment of their courses so that they may maintain a proper balance between production and the economic and social factors of agricultural and country life.

It is apparent with reference to some of the more highly organized forms of specialized agriculture that an undergraduate course will not be sufficient for those students desiring thorough preparation for such pursuits. There should be graduate courses in such lines, and these may often be best given in a limited number of colleges especially equipped in personnel and in facilities for instruction along particular lines. Such, for example, would be true of dairying, the growing of apples, peaches, or citrus fruits, and irrigation or dry farming. An important branch of specialized agriculture to which this applies is forestry. It is evident that the undergraduate course, with its relatively large attention to the sciences and humanities and the general principles of agriculture, is not sufficient for the training of the professional forester. Most of the agricultural colleges are therefore teaching forestry only as far as it is concerned with the management of farm wood lots or the business of the forest ranger. A few graduate courses or special schools are giving the advanced training required by the forester.

In training students for farming or specialized forms of agriculture the colleges should consider the part which their graduates engaged in such pursuits may properly be expected to take in the communities where their lives will be spent.

The agricultural colleges in the United States are not merely instruments for giving vocational education to a few persons who intend to engage in farming; they are leading agencies in a broad system for promoting the improvement of agricultural and country life. They are therefore under obligation to plan their work with reference to reaching directly or indirectly the 30,000,000 people who live on 6,500,000 farms, — to supplying them with the best available knowledge regarding the state of agriculture, improved crops, live stock, farm equipment and management, marketing, coöperation, the organization and management of the farm home and rural community, or whatever pertains to the economic and social interests of country life.

The importance of having in rural communities agricultural-college graduates who are successful practitioners of general or special agriculture, has already been amply demonstrated in many localities. When properly trained, such men often have a leadership which promotes the best interests of agriculture and country life and helps to keep on our farms the young people who alone can give our future rural communities satisfactory economic and social development. Therefore our agricultural colleges should shape their work so that a considerable portion of their graduates may be led to settle and work on farms.

On the other hand, the agricultural colleges are right in taking the position that only a portion of the farm youth should be expected to pass their lives in agricultural pursuits. The scientific advance of agriculture, fostered and prompted so largely by these colleges, and the constantly increasing use of farm machinery, are bringing about practical and economic conditions under which the proportion of the population required for the successful prosecution of agriculture is somewhat steadily decreasing. At present only about one third of the population of the United States are living on farms, and yet our present agricultural difficulties are concerned chiefly with surpluses of farm products. Undoubtedly the ebb and flow of economic conditions will continue to affect migration from or to our farms from year to year, but the general result will be only superficially changed. Hence the agricultural colleges should give the youth who come to them the best opportunity to understand the conditions pertaining to farming and other pursuits having more or less relation to agriculture and country life, so that they can make an intelligent and free choice of their life work. Great care should be taken to present these matters so that those students whose fundamental likes and aptitudes best fit them for life in the open country will be led to choose courses fitting them for such a life. Only in this way is there hope that our rural communities will have the best leadership and be kept at a high level of economic and social life.

There is a strong feeling that special studies should be made, in order to determine more definitely the objectives in college courses in agriculture. No doubt such an undertaking would be of invaluable service to agricultural education if the study were broad enough and sufficient in detail to determine the major objectives based on the needs of the various classes of students who pursue courses in agriculture. The content of the curricula should be fundamental rather than incidental to the needs of college students. After determining the major objectives, the next important step is to make a job analysis of the various branches of agriculture, to designate the units necessary in order to reach the objectives. First consideration should be given to those of greatest importance. The subject matter should be arranged with reference to the mental development of the students, and the latest and best teaching practices should be adopted. One present difficulty in determining the objectives of college courses in agriculture is the wide range of opinion among agricultural teachers themselves as to what are the definite and complete objectives. When each of the occupations which can be accepted as related to objectives of college courses in agriculture is analyzed into its major and subordinate units, so that there

is more complete understanding of the requirements of the occupations, there will be more agreement as to the objectives to be attained in agricultural-college courses.

### *Training for Research in Agriculture and Related Sciences*

In the United States Department of Agriculture and the state agricultural experiment stations, this country has a very comprehensive system of research relating to agriculture and country life. It is estimated that the Department annually spends \$10,000,000 in research. The experiment stations had an income of \$11,000,000 in 1926 from Federal and state sources. The Purnell Act of 1925 gave them an annual increase of \$480,000 of Federal funds for the next five years.

The Department and the stations employ over 4000 trained men in this work. The work in the aggregate covers every phase of agricultural production, and in recent years has been expanded to deal with many economic and social problems of the farm, home, and rural community.

Most of the scientific workers in the Department and the stations have received at least a part of their training in agricultural colleges. While it is true that many of the problems with which these research agencies deal, involve applications of the principles of the pure sciences and may be efficiently solved by investigators trained in those sciences who have the proper point of view, yet in the great majority of cases the agricultural relations of even these problems are such that they can be most advantageously investigated by scientists who have studied agriculture as well as the sciences; and there are very many problems which require for their solution an intimate knowledge of agricultural conditions. Hence it is the duty, as well as the great privilege, of the agricultural colleges to lead some of their students into the paths of agricultural research and to provide them with the best available instruction and facilities for training in such research.

To do this adequately involves not only special elective courses in the undergraduate curricula but also a large amount of graduate work. The aim should be to carry the prospective investigator through to the Ph.D. degree. Thus far only a few of the agricultural colleges have been able to do this.

Training in research should include instruction in experimental methods as well as in subject matter. The student should also be led to give careful attention to the statement of the problem to be investigated, the procedure to be followed in its solution, and the nature of the records and reports to be made. The agricultural colleges have a great

advantage as research training institutions in the broad and thoroughly systematized organization work of the experiment stations so intimately connected with them. Their students have constantly before them the procedure and the results of research in many lines. This gives those who are inclined to undertake research a great incentive to carry further the work which they see going on.

The agricultural colleges are under strong compulsion to make the training of investigators one of their major objectives, because they realize that unless they continue to be fountains of new knowledge which will benefit agriculture and country life, their nation-wide constituency will think that they have failed. There must be a constant stream of tested knowledge for wide dissemination through the extension agents. This can come only from the work of competent and thoroughly trained investigators. These colleges must train the workers who are to keep up the flow of new agricultural knowledge into all the rural communities.

*Training of Teachers of Agriculture and Related Sciences and  
of Agricultural Extension Workers*

Agricultural colleges are not professional schools in the same sense as engineering, medical, and law schools. Agriculture is not only a business but also a mode of life. The farmer is not only a worker in a vocation but also a business manager and a person with peculiar home and community relations. His education should deal with all these affairs and their relationships, and whoever is being trained to give instruction regarding agriculture and country life should have an education broad enough to enable him to understand and deal intelligently with all these matters.

There should be no radical change in the agricultural and scientific content of curricula for this group of professional workers from that suggested for those preparing to become practical farmers. But those desiring to prepare for teaching or extension work should be required to select certain courses in the field of education, psychology and methods of teaching, and supervised practice training. The professional courses now required for those preparing to teach agriculture in the secondary schools should likewise be required of those who are preparing for college teaching. During recent years many of the agricultural colleges have given serious consideration to the question of professional training in education for college teachers, and standards are now being maintained which require the younger college teacher to have had a certain amount of professional training before employment

is considered. Many of these colleges are reluctant to consider applicants for permanent assignment as teachers unless they have had such training, together with special graduate work. A dean of one of our agricultural colleges recently said, "I have notified the heads of departments that I shall not in the future approve the appointment of any new instructors unless they have had at least educational psychology and principles of education or will agree to take those subjects at the first opportunity after appointment."

Immediately after the passage of the Smith-Hughes vocational-education act of 1917, each state agricultural college was selected as the place for the training of teachers of vocational agriculture. The primary object of vocational agricultural education of less than college grade is to aid in developing farm youth in operative and managerial ability and to impart the technical information and skill needed to make a successful farmer. Before this time agriculture had been taught in secondary schools, but as a rule the teachers employed had had no professional preparation for their work, and the work was less of a vocational character than it is now.

Agricultural instruction under the Smith-Hughes Act is rapidly expanding. In 1918 there were 609 all-day schools, while in 1928 there were 5754 all-day, evening, day-unit, and part-time schools teaching vocational agriculture. In 1918 there were 164,186 pupils in these schools, whereas in 1928 the enrollment comprised 858,456 pupils.

Since the passage of the Smith-Lever Act in 1914 a nation-wide system of agricultural extension work has been developed. In 1926 there were about 2300 county agricultural agents, 950 home-demonstration agents, and 140 club agents. Several millions of the farming people were reached by the meetings, demonstrations, and personal interviews of the extension agents. About 600,000 boys and girls were enrolled in the 4-H clubs. The primary purpose of all this work is to improve agriculture and country life through combating pests and diseases, to improve soil, crop, and live-stock conditions, and to make life on the farm more wholesome and attractive. The extension agents are mostly graduates of the agricultural colleges. Thus the agricultural colleges are charged with the responsibility of preparing extension workers for effective leadership in the improvement of agriculture and country life.

Extension work is very largely a specialized form of teaching. It is important, therefore, that those preparing to be extension agents or specialists should have a broad knowledge of agriculture and the related sciences, supplemented by special courses in economics, sociology, psychology, methods of extension teaching, and extension organization.



*Training for Professions and Vocations related to Agriculture and  
Country Life*

There are now openings for well-trained persons in many pursuits, outside of those considered strictly agricultural, which require for their most intelligent performance a knowledge of agricultural science and practice. Among such pursuits are those requiring the services of experts in plant pathology, economic entomology, veterinary medicine, landscape gardening, drainage, irrigation engineering, farm machinery, fertilizer manufacture, and many kinds of commercial business dealing more or less intimately with agricultural goods or rural affairs. Public organizations, such as state boards of agriculture, the administrative and regulatory offices of the United States Department of Agriculture, and municipal offices controlling public markets, the sale of milk, etc. should have in their employ many persons trained in agriculture. For many years the agricultural colleges have given attention to training for some of these pursuits. The whole system of control of fertilizers, feeds, seeds, injurious insects, and plant and animal diseases has been developed on the basis of the work of these colleges and their experiment stations. Veterinary medicine has been taught in many of these colleges, but, like forestry, it requires so special a curriculum and teaching equipment that only a few institutions give degree courses in this subject. In recent years the number of courses in subjects relating to professions and forms of business outside the strictly agricultural field has greatly increased. In this way the influence of the agricultural colleges has been greatly broadened in the direction of promoting the general welfare of our people by training those persons who are to be leaders in the best development of agriculture and country life, and of safeguarding the food and health of both rural and urban communities. Without doubt the objectives included in this broader service of these colleges will continue to increase in number and variety as the value of such work by these institutions is more fully appreciated.

*Occupations of Graduates as related to Objectives of  
Agricultural Curricula*

Only a few of the agricultural colleges have kept records which enable them to tell definitely the occupations followed by their graduates. The results of a recent study, by the New York State College of Agriculture at Cornell University, of the occupations of its farm-reared graduates are summarized in the following table, published in *Farm Economics* of that institution, February 6, 1926 :

PRESENT OCCUPATIONS OF FARM-REARED MEN GRADUATING FROM THE  
NEW YORK STATE COLLEGE OF AGRICULTURE

| OCCUPATIONS  | PER CENT OF TOTAL |           |           |
|--|-------------------|-----------|-----------|
|  | 1910-1914         | 1917-1921 | 1922-1925 |
| Farming: farm-owners; renters; managers; hired men . . . . .   | 39.3              | 36.2      | 34.4      |
| Agricultural business: buying or selling agricultural supplies and products; nursery men; florists; farmers' coöperatives; manufacturing and preserving agricultural products; agricultural journalism and advertising; etc. . . . . | 9.0               | 12.1      | 16.4      |
| Agricultural technicians: bacteriologists; entomologists; chemists; foresters; landscape architects; veterinarians; naturalists; etc., for commercial concerns or in private business . . . . .                                      | 4.5               | 3.0       | 2.4       |
| Agricultural teaching, research, and extension: agricultural-college and secondary-school-teachers; experiment-station and United States Department of Agriculture workers; county agents; county-club agents; etc. . . . .          | 37.1              | 33.6      | 35.9      |
| Nonagricultural work: all professional and nonprofessional men not engaged in work directly connected with some phase of agriculture . . . . .   | 10.1              | 15.1      | 10.9      |
| Total . . . . .  | 100.0             | 100.0     | 100.0     |

Some statistics published by the New York State College of Agriculture indicate a decline in the proportion of graduates not farm-reared who engaged in agricultural pursuits. A summary is given in the following table:<sup>1</sup>

|                               | 1910-1914 | 1917-1921 | 1921-1923 |
|-------------------------------|-----------|-----------|-----------|
| Farm-reared men . . . . .     | 9.0       | 12.1      | 15.6      |
| Men not farm-reared . . . . . | 21.7      | 18.8      | 14.3      |

<sup>1</sup> *Farm Economics*, No. 40, December, 1926, New York State College of Agriculture, Cornell University, Ithaca, N. Y. The value of farm experience is therefore shown by the fact that farmers' sons with an agricultural-college education are able to capitalize their farm experience in a great variety of agricultural pursuits.

## ENTRANCE REQUIREMENTS

Since the agricultural colleges are not vocational schools in the narrow sense but are intended primarily to train students for agriculture and country life, their entrance requirements do not now differ materially from those of other colleges granting the degree of Bachelor of Science. Since they are, with few exceptions, public institutions, and therefore more or less closely linked with the general system of public education in their respective states, each college has entrance requirements which reflect in large measure the status of the high-school system of its state. Many of their students are farm boys who have attended small high schools in villages or small cities. Their actual preparation for college has therefore been such as these high schools give. This has to be taken into account in admitting them to college, whatever the formal requirements for entrance may be. The early laws which in some states required the agricultural colleges to admit students on the completion of their work in the elementary schools, have been repealed, but the influence of such legislation persisted for a long time, especially in states where the public-high-school system developed slowly, and where it was difficult for the farm youth in many localities to reach any high school. On the other hand, these colleges have in recent years been helped to establish and maintain proper entrance requirements by the changes in the high-school curricula, which have in general made these schools less strictly institutions for preparation for the colleges of liberal arts. Undoubtedly the present breadth and flexibility of the high-school curricula are leading more students into the colleges, and in the case of the farm youth are making it easier for them to enter the agricultural colleges. The Smith-Hughes vocational-education act is also beginning to affect the preparation of farm youth for college, and will do so increasingly as the broad system of secondary vocational education provided for in that act continues to be developed. Under the present policy of administration of the Federal and state funds devoted to agricultural instruction under that act, vocational agriculture is taught in the local high schools as a part of the general high-school curriculum. This means the improvement of the agricultural instruction so that the colleges can more appropriately give entrance credit for high-school agriculture. It also tends to lead students preparing for agricultural colleges to give more attention to the natural sciences and to improve the instruction in science in even the smaller high schools.

The Smith-Hughes Act has also linked the agricultural colleges more closely to the high schools teaching agriculture, by making these col-

leges training schools for teachers of agriculture. These colleges are therefore becoming more influential in shaping the high-school curricula and in giving agriculture and related sciences a definite and worthwhile place in the high-school system.

It is only within comparatively recent years that entrance to colleges has been determined by any other method than by examination in specified subjects at the college. At present there are various methods of admitting students to college, such as through the presentation of a certificate or diploma from an approved high or normal school, through examinations conducted at the college, through examinations conducted under supervision of an examining board remote from the college, through a combination of certificate and examination, through teacher's certificate, and through intelligence tests. By far the larger number of students who now enter agricultural or other colleges are admitted by presenting certificates or diplomas from accredited high schools which require a definite number of units for graduation, and which are approved jointly by the college and the state board of education.

In general the state agricultural colleges and universities are cooperating closely with the state departments of education for the purpose of establishing a more effective standard for articulating secondary and higher education. As an outgrowth of this cooperation there has developed a system of inspecting and approving various high schools, with the purpose of placing the schools upon an accredited basis, provided the work they are doing appears to justify such recognition. An accredited high school, as a rule, is one that meets certain prescribed standards of teaching force, equipment, and general efficiency and is conducted under a four-year course of study beyond the eighth grade. As a result of more systematic methods of inspecting and approving high schools, the number of accredited high schools in the United States has increased rapidly in recent years.

### *Units required for Admission*

The introduction of the term "unit" as a measure for college entrance is of more recent origin. The use of the unit system has done much to establish more systematic relationship between high schools and colleges. Some of the high schools have doubtless endeavored to maintain a higher unit standard than their facilities would warrant. There has also been some danger of colleges' insisting on higher standards of units than it is practicable to enforce. Care still needs to be exercised to prevent sacrifices of thoroughness for the sake of higher unit standards.

With the adoption of the elective system in the colleges, beginning about the middle of the nineteenth century, there came the development of more freedom in the choice of college-entrance subjects. This transition in the American system of higher education doubtless was influenced to some extent by the trend toward a more liberal type of education, such as was sponsored by those who favored the establishment of the land-grant institutions, wherein more attention would be given to the sciences and practical subjects.

The standard number of units required by the agricultural college for admission at present is 15. It is only within the past fifteen years that the unit requirement for admission to colleges has been raised from 14 to 15. The colleges usually specify in their catalogues that applicants must have completed a four-year high-school course, aggregating at least 15 units.

A very limited number of agricultural colleges state that students may be admitted on condition with only 14 units, the conditions to be removed during the first year in college. Only about two of the agricultural colleges require 16 units for entrance. As a rule there is considerable uniformity in the number of prescribed units for entrance. The majority of the agricultural colleges prescribe from 7 to 10 units for entrance. A limited number prescribe only 5 units and a small number require 10 to 12 units. The remaining units in each case are elective. The majority of the colleges have a system of prescribed electives whereby students must select a certain number of units from designated groups of subjects. A number of free electives are permitted by most of the institutions.

All the land-grant colleges prescribe subjects in which entrance units may be offered. It is to be noted, however, that the number of subjects that are prescribed for entrance is decreasing, and the number for which credits may be allowed is increasing. The various subjects in which definite units are prescribed are English, mathematics, social science, natural science, and foreign languages. All the institutions require entrance units in English, the maximum requirements being 4 units and the minimum only 1 unit. The majority of these institutions have a standard of 3 units in English. Ordinarily 2 units are required in mathematics. With perhaps a few exceptions all institutions require some mathematics, ranging from 1 to 3 units.

The number of optional units ranges from about 3 to 10 or 11, the average being around 6. There is an increase in liberality on the part of the colleges regarding the number of options that may be offered. Particularly is this true with reference to vocational subjects. The rapid expansion of vocational subjects in the high schools has had a

marked effect upon the range of subjects which may be offered as optional. Students who have completed the high-school course in a place where agricultural courses are taught frequently offer entrance units in agricultural subjects. Most of the colleges, however, place a limit on the number of units allowed students in such subjects. Several of these institutions specify that 4 units will be accepted in vocational agriculture.

### *Nonacademic Requirements*

Information available from agricultural-college catalogues shows that approximately one third of the agricultural colleges prescribe a minimum age at which students may enter the college. Almost all these colleges designate 16 years as that minimum. This limit is not now a matter of serious moment at the agricultural colleges, however, as the great majority of students cannot complete a four-year high-school course below 16 years. The average age of students who enter standard colleges and universities throughout the country is between 18.5 and 19 years, which would indicate that college students generally graduate at about 23 years of age.<sup>2</sup>

About one fourth of the agricultural colleges prescribe certain moral requirements, which include testimonials, statements, references, etc., to show that the student is morally upright, reliable, of good character, and deservingly dependable, and at the same time energetic. The statement commonly made is that students must furnish a statement from a reliable authority. A more modern development than that of requiring a statement of good moral character, and one which is apt to lead to greater accomplishment, requires the high-school principal to submit a statement regarding the student's capacity to pursue college courses, his chances for leadership, his ambitions, possible achievements, and chances to develop into a useful citizen.

Advanced standing in the agricultural colleges is seldom granted for additional secondary-school work except by examination. These institutions grant advanced credits to students from other colleges or universities. Full credit is usually given for work done in the institution from which the student comes, when his work there corresponds to that required for graduation in the institution in which the student desires to enroll. In most cases of transfer students are required to present a statement of honorable dismissal before entrance can be effected.

For admission to the college of agriculture of the University of California the applicant must be certified by the principal of the school as

<sup>2</sup> H. C. McKown. The Trend of College Entrance Requirements, 1913-1922. *United States Bureau of Education Bulletin No. 35*, 1924.

fitted, in the judgment of the principal, to undertake college work, with reasonable prospect of success. The Washington State College of Agriculture has a provisional admission requirement as follows :

Those students whose scholarship places them among the lowest one fourth of the membership of the graduating class of an accredited high school will be rated as belonging to Class B. They will not be admitted to the state college unless they are recommended for trial by the high-school principal.

A small number of agricultural colleges have set up standards of physical requirements for entrance to college courses. Some colleges prescribe that each applicant must present a health certificate from a physician, stating that the applicant is free from any sort of contagious disease. The catalogue of the Pennsylvania State College says, "Every student admitted to the college must present to his scheduling officer a physician's certificate showing successful vaccination." Many other institutions of this type require a certificate of vaccination before admission. All the agricultural colleges are giving more attention to the physical well-being of students. In recent years there has been great improvement in the general health of students in agricultural colleges, as well as in other institutions.

In a limited number of colleges other than agricultural colleges some attention has recently been given to intellectual requirements for entrance. This plan is being used mostly by those colleges which are overcrowded and cannot accept all applicants who meet formal requirements. The aim of this procedure is to use some discretion in admitting students, in order that accommodations may be insured for students of greater ability who should be encouraged to go to college. Generally considered, the agricultural colleges have not been overcrowded in recent years, and the providing of suitable accommodations for students has not been a serious problem.

A plan for segregating freshman college students on the basis of capacities has of late been tried in some colleges. In this case the capacity of each student is determined by intelligence tests, records of performance in high schools, etc. This system has been used to some extent by certain agricultural colleges and by other types of institutions with some degree of success. There are teachers in agricultural colleges who believe that the segregation of college freshmen is educationally sound and should be more extensively used. Classification of students on the basis of capacity has thus far had no influence in changing the number of units required for entrance to agricultural colleges.

There is a limited number of agricultural institutions which accept students deficient in their preparation for college, and permit such

students to take courses in the so-called school of agriculture, which is maintained practically as a secondary school. Students following this procedure are as a rule required to spend more years before graduating. It is still doubtful whether uniform entrance requirements should be rigidly enforced in all these colleges, in view of the fact that many of the students who enter agricultural courses come from small towns or rural communities where high schools giving sufficient instruction to meet the standard 15-unit requirement are not yet in operation. Some institutions are practically compelled to continue offering opportunity to students to complete, after coming to college, the number of units which they lack. Such a practice should not prevent the proper standardization of the college course for those who have had sufficient opportunity to meet the regular requirements.

### THE UNDERGRADUATE CURRICULUM

The past twenty years has been a period of rapid development of the agricultural colleges of the United States. These institutions have not only grown in number of students, but they have come to occupy a position of greater importance in the system of higher education in this country. The programs of this type of institution, while remaining highly specialized in many respects, are broadly organized so as to cover a vast field of subject matter adapted to the needs of prospective workers in a large number of professions and occupations. In order to meet the growing demand for agricultural education in recent years, the institutions have found it very necessary to give some attention to curricula reorganization. While considerable improvement has been made in this direction, the results accomplished have not been entirely satisfactory. There are a great many leaders in this kind of education who believe that there is yet ample room for improvement.

In the beginning the agricultural-college curriculum was patterned very largely after the liberal-arts colleges of the early days, and therefore involved little more than a few additions to the courses already in existence. In more recent years the academic subjects in many respects have been compelled to give way to the agricultural and scientific subjects, but not to the extent of narrowing the agricultural-college curricula. Greater freedom of election is evident. With the addition of new and highly specialized technical courses has come greater opportunity for specialization. More of the laboratory work is based on practical applications of principles learned in the classroom, and many of the institutions now require that each applicant for a degree in agriculture must have had, before graduating, a certain amount of practical



farm experience. The agricultural-college catalogues show that there have been constant changes in the courses of study. Apparently the aim has been to set up more definite objectives and to try to attain them.

Regardless of the fact that there are differences of opinion as to the constituted aims of agricultural-college courses, it seems safe to assume that, broadly considered, the accepted aims are cultural and vocational. The broad field of subjects included under the agricultural-college program makes it necessary that the college curriculum stand for more than proficiency in one vocation or profession. Obviously a degree from an agricultural college should mean that a sufficient number of subjects of a vocational character have been completed. In addition there should be required those courses that give a clear insight into social and economic affairs, with a broad appreciation of their relation to practical life situations. The cultural aim should also have proper consideration. There can be no doubt that a fundamental need of all students is that each, upon graduation, shall be equipped by his college course with a fair degree of general education and endowed with at least a reasonable degree of culture. No college course that fails in this particular can be considered a success, even though it does succeed in supplying the student with an abundance of technical information. The aim that should be kept in view in the agricultural-college program should be to develop a competent worker skilled in the chosen profession or vocation, with a sufficient additional training to prepare for social service in its broadest sense.

### *Distribution by Subjects*

The catalogues of the agricultural colleges show that the work of the curriculum is distributed about as follows: academic, or nontechnical; scientific, comprising the pure and applied sciences; technical agriculture, comprising general and special agriculture; electives. With perhaps one or two exceptions the program in all the agricultural colleges for the freshman and sophomore years is required work; the electives in most cases are deferred until the junior and senior years. Some of the colleges are more liberal in the matter of electives than others. According to Professor Woodward<sup>3</sup> the average percentage of academic work required in the freshman year was greater than in the other college years. Approximately two fifths of the work in that college year was being given to academic courses. On the average there was a decrease each succeeding year in the amount of time given to

<sup>3</sup> Carl R. Woodward. The Curriculum of the College of Agriculture. *United States Bureau of Education Bulletin No. 40*, 1920.

academic courses. According to Woodward the average distribution of work to each of the groups in forty-eight colleges for four years was as follows: academic, 22 per cent; scientific, 24.5 per cent; agriculture, 38 per cent; free electives, 14.6 per cent. There were some individual exceptions to this rule, however, as a few of the institutions offered a higher percentage of academic work in certain years above the freshman year.

The most frequently occurring subject of the academic group is English, which comprises courses in grammar, rhetoric, composition, literature, public speaking, journalism, etc. Practically all the colleges require one or more courses in English, and, with perhaps one or two exceptions, English is required in the freshman year in all agricultural colleges. The amount of required work in English varies from 4 to over 16 year hours.

The next subject of importance under the academic group is mathematics. More than half the agricultural colleges require work in mathematics for graduation. It is most often required in the freshman year, and few colleges require it thereafter.

The social sciences, such as history, civil government, economics, sociology, and education, require considerable attention under the academic group. Practically all the institutions require for graduation one or more courses in this group of subjects. As a general rule, the social-science courses are required in the junior and senior years, only a limited number of colleges requiring them in the freshman or sophomore year. The increased attention given to agricultural economics, rural social problems, and marketing in recent years has stimulated greater interest in the social sciences in the agricultural-college curricula.

The establishment of the teacher-training department provided for under the Smith-Hughes vocational-education act has had a marked influence on the number of social-science subjects offered in the agricultural-college curricula.

Foreign languages as a requirement for graduation are found in less than half of the curricula. In recent years there appears to have been less interest in this field, though certain colleges still place considerable stress upon it.

Under the scientific subjects required for graduation are those closely allied to agriculture. In this list are general and agricultural physics, chemistry, botany, biology, bacteriology, genetics, plant pathology, and economic entomology. Although there is considerable variation in the amount of science required by the various institutions, about 50 per cent of the required subjects are sciences. It is interesting to

note that all the colleges require science in the first two years, and that more than half require some science in the junior and senior years. The amount of science required in the different years varies considerably, but there is a decrease in the average amount of required science in the upper classes. The science requirements in a number of the colleges are rather unevenly distributed, the curricula in several of the institutions requiring from two to four rather heavy science courses the same year.

### *Prescribed and Elective Subjects*

Under the head of technical subjects, comprising about two fifths of the work of the curricula, are included such subjects as agronomy, horticulture, landscape gardening, forestry, animal husbandry, veterinary science, agricultural engineering, farm management, rural economics, and rural sociology. There is considerable variation in the total requirements in the technical subjects for graduation. It is also true that the amount of technical work required increases each year throughout the college course. Some of the colleges require a lower proportion of technical subjects, with a corresponding increase in the number of elective courses.

As a rule the amount of elective work required is definitely stated. Electives are separated into two groups, known as prescribed electives and free electives. The average amount of time given to prescribed electives in all the colleges during each of the college years is more than double that given to the free electives. The prescribed electives generally mean that students are allowed to select these electives from a list of subjects given by the colleges. Many of the students in agricultural colleges choose their elective subjects from the technical subjects. This is practically advantageous in cases where the student is preparing for some special phase of practical agriculture, scientific research, or extension work. The college authorities are divided in opinion as to the amount of freedom that should be allowed students in the matter of electives. It seems safe to assume, however, that considerable progress is being made in formulating better balanced curricula for the agricultural colleges.

There was formerly very little instruction directly relating to agriculture in the first two years of the college course, but now all the agricultural colleges require work in some agricultural subjects during freshman and sophomore years. Usually these courses deal with crop and animal production in a somewhat general way, and in fact are basic courses, one of whose objects is to give the student an idea of what is included in scientific agriculture and thus prepare him to choose his

major subjects more intelligently when he comes to his junior year. These courses run parallel with the more elementary and fundamental courses in the natural sciences, and thus the relation of these sciences to agriculture, and many of their applications to agricultural practice, are brought to the attention of the student.

In a broad way the curricula of the agricultural colleges are divided into groups according to the main divisions of agriculture, — namely, agronomy, horticulture (subdivided into olericulture, pomology, floriculture, and landscape gardening), forestry, animal husbandry, poultry-raising, dairying, agricultural engineering, rural economics and sociology, agricultural education, and veterinary science. These curricula are usually arranged on a system of group electives, and there is often a considerable opportunity for choice of special subjects within each of the curricula. The number of courses offered in some of the larger institutions is very great, and there is opportunity in these colleges for a large amount of specialization even in the undergraduate work.

The agricultural-college curricula have been influenced to a great extent by external factors surrounding the colleges. The programs of the colleges have developed on the basis of local conditions and needs. The location of the colleges has very materially affected the nature of the subject matter with which the instructional force have had to deal. This is a logical development that might well be expected. The equipment that colleges have had to use in prosecuting their work has also been of considerable influence. As a rule the larger institutions have had better financial support. In the great agricultural sections of the North Central States, the South, and the West, the more specialized farming has had great influence in shaping the curricula of the agricultural institutions. The agricultural colleges and experiment stations are service stations from which the solution of many pressing problems must come. The corn, cotton, and wheat farmers look to their agricultural college for needed information about their problems. The citrus-fruit grower would expect to receive from his state agricultural college much valuable assistance pertaining to his problems. In these agricultural sections, with the exception of California, less attention is in general given by the colleges to academic courses, and more to the agricultural courses. The amount of academic work appears to decrease as we go from east to west, and the amount of free elective work appears to increase. The southern and New England groups of states are relatively high in their academic work and correspondingly low in their agricultural work.

In a study by Woodward of the distribution of the types of work in the curricula of the agricultural colleges in California, Illinois, Iowa,

Minnesota, New York, and Wisconsin it was found that California required 30 per cent of academic work; New York, 28.3 per cent, and the others about 30 per cent (except Iowa, which had only 13.6 per cent). There were less marked variations in the other divisions of the curricula.<sup>4</sup>

### *Theory and Practice*

It is a well-known fact that the agricultural colleges have been severely criticized because, during the four-year college course, the problem of closely articulating the theory with actual practice has not been adequately solved. The colleges should endeavor at all times to coördinate theory with practice in so far as is practicable. Too many students have been permitted to graduate from colleges of agriculture without having had some actual practical farm experience. During the past decade progress has been made in this direction. A large number of the colleges now require that before graduating in agriculture students must have had some practical farm experience, the amount varying from three months to one year. A small number of the colleges require that the work be taken under the supervision of the college. Most colleges do not allow any credit for this work in the form of units, but the agricultural student must satisfy the proper authorities before graduation that his experience is ample to enable him to apply principles. The more actual farm practice a prospective agricultural college graduate can obtain, the better able he should be to appreciate the value of his education. He will find the practical experience indispensable if he becomes a teacher of agriculture in the secondary school, an extension agent, a specialist, or a farmer.

In regard to methods used by the agricultural colleges in awarding college credit, there is considerable variation. In general these institutions maintain sessions of 36 weeks, but there is great variation in the number of working days in the college year. The number of days reported by some institutions is as high as 216, while others report less than 200.

There is also some variation as to the number of terms in the session. More than two thirds of the institutions have the session divided into two terms, or semesters. In the remaining institutions the session is divided into three terms. This variation is responsible for differences in the value of credit units.

In 1925 the bachelor's degree was granted to 2216 students in agricultural courses in land-grant institutions. There has been a reduction

<sup>4</sup>Carl R. Woodward. *The Curriculum of the College of Agriculture. United States Bureau of Education Bulletin No. 40, 1920.*

in the enrollment of students in agriculture during recent years, mainly due to the economic depression in agriculture in the great farming areas of the United States. It is believed, however, that this decrease is temporary, and that the colleges will soon regain their normal agricultural enrollment.

### RESEARCH AND GRADUATE WORK

The research work of the agricultural colleges, and to a considerable extent their graduate instruction, are centered in the agricultural experiment stations connected with these institutions. These stations are supported by Federal and state funds and are subject to the provisions of both Federal and state legislation. Agricultural research in these colleges is therefore not a matter of voluntary action by instructors or boards of trustees but is a public function of the colleges, prescribed by law. Moreover, the colleges have been obliged to set up a definite and distinct organization for the conduct of research and the publication of its results. Each station has a director with expert and clerical staff, much special equipment, and funds for the printing and distribution of publications. While much of the work of the stations is carried on in college buildings which are also used for instruction, there are many special buildings and fields for station purposes only.

Federal legislation for agricultural research at these colleges has been framed on the principle that the Federal funds would be subsidies to state institutions. The Federal government would have only such control of these funds as would insure their expenditure for the purposes stated in the Federal laws, but it would aid the states and the colleges to develop the work of the stations most efficiently.

Federal legislation has been a stimulating influence in developing scientific research in agriculture for more than half a century. The college Land-Grant Act of 1862 was passed in the same year as the act establishing the United States Department of Agriculture, which from its foundation has been in more or less close contact with the agricultural colleges. The language of the Land-Grant Act shows that the presumption was that these colleges would carry on experimental work. Many of them attempted to do this from their beginning, and it was largely on their insistence that they needed Federal funds for the proper development of such work that Congress passed the Hatch Act in 1887, providing for the establishment of agricultural experiment stations which, with a few exceptions, must be departments of the agricultural colleges in the several states, created under the Land-Grant Act. The Hatch Act authorized the appropriation of \$15,000 annually

to each state for the purpose of aiding in acquiring and diffusing useful and practical information on subjects connected with agriculture and promoting scientific investigations and experiments in the applications of science to agriculture. Under the provisions of this act, and with state financial aid, experiment stations were established in all the states, where a great variety of scientific and practical investigation was gradually undertaken. The Hatch funds could be used for the general expenses of the stations, including the printing and distribution of publications.

Under the Adams Act of 1906 an additional appropriation of \$5000 was made for that year; this amount was to be increased annually by \$2000 for five years, after which \$15,000 was to be appropriated annually to each state. From the Hatch and Adams acts each agricultural station now receives \$30,000 a year for its work. The Adams fund can be spent only for original research.

In order more extensively to aid the agricultural experiment stations, Congress, in 1925, passed the Purnell Act, which provided for the appropriation of \$20,000 for the year ending June 30, 1926; this amount is to be increased by \$10,000 each year until 1930, after which \$60,000 is to be appropriated annually to each state station. The Purnell funds are to be used to pay the expenses of conducting investigations bearing directly upon the production, manufacture, preparation, distribution, and marketing of agricultural products, and including sociological and economic investigations pertaining to rural life and the home.

The Federal appropriations for this work have also greatly stimulated the states to furnish financial aid for scientific investigations relating to agriculture. As a result the states have, as a general rule, been fairly liberal in their support of the research work of the stations.

### *Experiment Stations*

Under a special provision of the Hatch Act an Office of Experiment Stations was established in the United States Department of Agriculture, which not only has had general supervision of the expenditure of Federal funds granted to the stations but has aided them in many ways, notably by the publication of the *Experiment Station Record*, an abstract journal which gives comprehensive information regarding agricultural research throughout the world.

The total amount of funds available to the stations for the fiscal year ending June 30, 1925, approximated \$10,500,000, which represented an increase of some \$340,000 over the previous year. Of the

total income for the year \$1,440,000 came from Federal appropriations under the Hatch and Adams acts. State appropriations amounted to \$5,827,871. The remainder, amounting to more than \$3,000,000, represented the balance carried over from the previous year and funds derived from sales of farm products and other sources. These stations employ about 2400 workers in their regular service. About 1200 of this number give a portion of their time to teaching in the colleges, and approximately 350 assist in extension work. The stations issue annually vast numbers of publications widely distributed to approximately a million addresses. The information contained in these publications forms the basis of much of the teaching material and extension work of the colleges. The results are also published in the daily press and agricultural weeklies, with brief summaries in the *Experiment Station Record*.

The work of the experiment stations is chiefly formulated in definite projects. In 1924-1925 these projects aggregated 5538. These investigations covered a variety of problems relating to field crops, horticulture, animal husbandry, soils, animal and plant diseases, dairying, injurious and beneficial insects, agricultural engineering, farm sanitation, foods and nutrition, rural economics, and sociology and home economics.

Much has been accomplished by the experiment stations along the various lines of scientific research. The results have developed a vast amount of valuable information which has either directly or indirectly influenced many important changes in agricultural practice in the different sections of the country. In all the states the farmers, agricultural teachers, and extension workers have come to rely more and more upon the stations for scientific advice regarding their various agricultural problems.

Before the beginning of the present century, when the research work of the experiment stations and the United States Department of Agriculture had developed and assembled tested agricultural information, there was little really worth teaching in the college courses in agriculture or carrying out to the farm people through extension work. But in recent years the amount of useful agricultural information accumulated by research not only has made possible strong agricultural courses in the colleges but has enabled them to develop a nationwide agricultural-extension organization, supported annually by over \$19,000,000 of Federal, state, and county funds and employing 1200 leaders and specialists at the colleges and over 3000 men and women agents located in the counties.

The agricultural colleges, as a rule, have not organized separate graduate schools for the purpose of offering opportunity for students



to pursue studies for advanced degrees. Most of these colleges offer a certain amount of graduate work, however, and practically all grant the master's degree. Only about one fourth of them offer the degree of Doctor of Philosophy. In June, 1925, the master's degree was granted to 352 men students in the agricultural colleges. There were 36 doctor's degrees granted at the same time. There has been a tendency in most of these colleges to articulate the work of the experiment stations very closely with their graduate work. This service is being extended not only to members of the staff, who may be doing research work for advanced degrees, but also to other graduate students. Many colleges now grant fellowships or give the graduate students positions as assistants on the teaching force or the experiment station staff.

### *Experiment Stations and Graduate Work*

The experiment stations have been the most effective agencies for stimulating interest in graduate study in agriculture. They are particularly fitted for this kind of work in equipment and personnel. Their experts are often especially suited to serve as advisers to students pursuing graduate work. The intimate contact which exists at the majority of the colleges between the station and teaching staffs enables students to come in contact with many research problems. The fact that many of the station workers give a portion of their time to teaching in the colleges, leads to administrative difficulties in keeping the proper balance between teaching and research as far as the individual worker is concerned. Yet undoubtedly this plan enables students to acquire a better knowledge of the projects and methods of investigation that are going on in scientific fields related to agriculture.

The experiment stations have often had limited funds with which to carry on a desired amount of investigational work in certain lines. In such cases they have made more or less use of graduate students for investigational work, — a plan or procedure which needs to be very carefully guarded to give good results. Successful station research depends chiefly on the work of the most competent available experts. The stations have definite research functions to perform, and their programs should not be hampered in any way by other influences. In many cases, however, research specialists have found the capable graduate student a source of real help, and while the work of student investigators has usually had to be done under rather close supervision, the programs of research work have been pushed forward at a more rapid pace through their assistance.

Acting in the capacity of assistants in station work has no doubt

been of great benefit to the graduate students. Where thus employed they become interested in the station projects, acquire the spirit of research, and learn how to use the tools of research and to think experimentally.

Graduate students are now used in more than half the agricultural colleges in connection with experiment-station projects. In institutions where research work is very highly developed, with investigators and ample funds set aside for the work, the stations have less need to make use of graduate students. Some directors of stations have been free in their praise of the services rendered by graduate students to the experiment stations. Other directors feel that many times promising students are an inspiration to other members of the staff. Many of the research men of the present time have served as station assistants during their student life. This is one way of training scientific-research workers, and if proper judgment is used in the selection of the students, the results obtained may be equally beneficial to research and to the development of the investigator. Our agricultural experiment stations, however, are public agencies and should not be treated as institutions for the training of investigators. If graduate students are employed in them it should be because as individuals they are competent to perform duties which meet the needs of the stations, rather than because the students need the instruction which they may thus receive.

The teaching departments of the agricultural colleges must assume responsibility for training their graduate students, and this training should be offered in definitely organized courses maintained in connection with the college or university. This training need not be confined to instruction in the agricultural subjects. Departments of botany, plant physiology, zoölogy, chemistry, and other natural sciences, engineering, economics, and sociology may properly have a part in the training of agricultural experts. Other types of institutions have in the past supplied many scientists used by the experiment stations and other agricultural organizations. These institutions will no doubt continue to render this valuable service. In most cases, however, instruction in agriculture is essential to the most successful research related to agriculture. The point of view of the investigator, and oftentimes his procedure, may be vitally affected by his understanding of the relation of his problem to agricultural practice or affairs.

Graduate training of agricultural teachers, investigators, and experts is essential to the best development of our agricultural schools and colleges, experiment stations, Federal and state departments of agriculture, and technical enterprises of many kinds related to agriculture.

If our agricultural colleges are to make adequate contributions to the development of satisfactory agriculture and country life, they must have the means and the will to maintain thorough courses of instruction for both undergraduate and graduate students, and to carry on the best types of agricultural research.

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## CHAPTER IV

### THE SCHOOL OF COMMERCE

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#### THE EXTENT AND FORM OF THE MOVEMENT FOR COLLEGIATE BUSINESS EDUCATION

The earliest known definite proposal for the establishment of a collegiate school of business in the United States is contained in a report, in 1869, by President Robert E. Lee to the trustees of the institution that later became known as Washington and Lee University. President Lee proposed "not merely to give instruction in bookkeeping and the forms and details of business, but to teach the principles of commerce, economy, trade, and mercantile law." This proposal was not carried out, probably because General Lee died in 1870.

The honor of actually establishing the first American collegiate school of business goes to the University of Pennsylvania, which was enabled, through Mr. Joseph Wharton's gift of \$100,000, to establish in 1881 the Wharton School of Finance and Economy, the name being changed later to the Wharton School of Commerce and Finance. Seventeen years went by before another such school was founded. Then, in 1898, The University of Chicago set up its College of Commerce and Politics (later known as the School of Commerce and Administration), and the University of California its College of Commerce. Two years later there were established at Dartmouth College the Amos Tuck School of Administration and Finance, at the University of Vermont a Department of Economics and Commerce, at the University of Wisconsin a School of Commerce, and at New York University a School of Commerce, Accounts, and Finance.

The new century thus began with collegiate education for business announced at seven institutions. The next decade saw ten more institutions added to the list; the next five years, twenty-three; and during the next nine years such a veritable craze for business education swept over the country that one hundred and forty-three more were added:

so that at the opening of the year 1925 one hundred and eighty-three (probably more) American colleges and universities had "departments" or "schools" or "courses" or "divisions" or some other formally organized unit of instruction under the name of "business" or "commerce" or "business administration" or some other appropriate title.

NOTE. No tested chronology of the establishment of such units of instruction is available. A first attempt at such a chronology is given below. In compiling the list an effort was made to secure a catalogue from every institution of collegiate rank mentioned in the usual educational directories. Such information as could be gathered from these catalogues was assembled, and correspondence with the institutions concerned was utilized as a means of catching errors and enlarging the information available. No doubt the list is still defective, because of omissions and other errors, and because the information received from not a few institutions is self-contradictory; but it will serve as a first approximation. 1881: University of Pennsylvania, Wharton School of Commerce and Finance. 1898: The University of Chicago, School of Commerce and Administration; University of California, College of Commerce. 1900: University of Wisconsin, Course in Commerce; Dartmouth College, Amos Tuck School of Administration and Finance; University of Vermont, Department of Economics and Commerce; New York University, School of Commerce, Accounts, and Finance. 1903: James Millikin University, School of Commerce and Finance. 1906: Washington and Lee University, School of Commerce and Administration. 1908: Oregon Agricultural College, School of Commerce; Harvard University, Graduate School of Business Administration; Northwestern University, School of Commerce; University of Pittsburgh, School of Business Administration. 1909: Ohio University, School of Commerce; Lehigh University, College of Business Administration. 1910: Olivet College, Department of Economics and Business Administration; Marquette University, College of Business Administration; St. Louis University, School of Commerce and Finance. 1911: Gettysburg College, Business Administration Course; State College of Washington, Course in Business Administration; St. Xavier College, Department of Commerce and Economics. 1912: Pennsylvania State College, Course in Commerce and Finance. 1913: University of Georgia, School of Commerce; University of Arizona, Course in Commerce; John B. Stetson University, Department of Business Administration; University of Denver, School of Business Administration; Boston University, College of Business Administration. 1914: University of Missouri, School of Business and Public Administration; Beloit College, Course for Business (in Department of Economics); University of Tennessee, School of Commerce; Oklahoma Agricultural and Mechanical College, School of Commerce and Marketing; Whitman College, Department of Economics and Business; Colorado College, Department of Business Administration; University of Oregon, School of Business Administration; Tulane University, College of Commerce and Business Administration; Allegheny College, Department of Economics and Business Administration. 1915: Cornell College, Department of Economics and Business Administration; College of New Rochelle, Department of Business Management; University of Illinois, College of Commerce and Business Administration; Mississippi Agricultural and Mechanical College, School of Business; Ohio State University, College of Commerce. 1916: Lindenwood College, Department of Business; University of the City of Toledo, Department of Commerce; Grinnell College, Department of Commerce and Business Administration; Defiance College, Course in Economics and Business Administration; Albion College, Department of Business Administration; University of Utah, School of Commerce and Finance; Columbia University, School of Business; Georgia School of Technology, School of Commerce. 1917:

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Perhaps 50,000 students were enrolled, not counting evening students. At first thought it may seem that too much is claimed in the way of membership in the movement for collegiate education for busi-



ness when one includes in the count the small and confessedly weak institutions which have little more than paper schemes. There is point to such a criticism. On the other hand, it may be urged (1) that no other criterion for deciding whether a collegiate "school" of business exists is readily available except the formal announcement of an organized division of work; (2) that the count omits several institutions which are known to have heavy offerings in business subjects, but which have not established a formal administrative unit; (3) that, as will appear later, such a count, large as it is, greatly understates the interest in business subjects in that it does not reflect the fact that literally hundreds of our colleges, large and small, have developed offerings in business subjects within their departments of economics. Even the small college with but one instructor in the department of economics typically allots a large portion of this man's time to instruction in such subjects as business organization, accounting, business law, and finance.

#### THE MOVEMENT A PERMANENT ONE

The fact that collegiate education for business has developed with such startling, perhaps unwise, rapidity should not lead one to conclude that it is a mere fad which is soon to pass away and be forgotten. True, this rapid development has in some instances been accompanied by such poor standards that a temporary reaction may well occur, although no such reaction seems to be in immediate prospect; but collegiate education for business has come to stay, and that as a significant part of our educational system. This conclusion concerning the permanence and importance of the movement is supported by several considerations.

In the first place, it is not a mere local movement. A similar development, although not so extensive, has taken place in the European educational system, and the testimony is unanimous that higher education for business has become an integral part of European educational plans. In the more important European nations the collegiate school of business is gradually attaining a position which in the past has been held rather exclusively by the orthodox university. In Germany, for example, the doctoral degree is being given (actually, although perhaps not technically) for this type of work in several institutions, while even in her orthodox universities business administration is now one of the required subjects for the doctorate in economics. Of course, European educational developments do not constitute proof that similar developments will take place or should

take place in the United States. They do, however, make it clear that American collegiate education for business is part of a world movement and is not a local, isolated happening.

In the second place, belief in the permanence of the movement in this country is supported by the fact that we have always envisaged our universities as institutions which should participate in training for the practical affairs of life,—an attitude that has seemed to become more fixed with the flight of time. We speak much of the “liberal-arts college,” but our history of institutions for higher education is fundamentally one of collegiate education for the ministry, for law, for medicine, for engineering, for social-service administration, and for other practical ends. So true is this that the professional school which is independent of university connections tends to be looked at askance. In view of our general acceptance of the idea that the higher levels of practical education are quite properly a function of a university, it is only to be expected that business, overwhelmingly our largest practical activity, should have its training schools at the university level. It is not surprising that several large permanent endowments have been secured by leading universities for this purpose, and it is a matter of common knowledge that this purpose appeals so strongly to legislators that not a few state universities have been enabled to nourish other forms of social-science work, especially economics, out of appropriations for business education.

American collegiate education for business is not only a part of a world movement and not only a natural expression of American educational ideals; it is, in the third place (and as another aspect of the matters just mentioned), a natural outgrowth of our economic development. Time was when the apprenticeship system was relied upon to provide training for both the technological and the pecuniary-market aspects of business, not to mention its services in training for citizenship. The Industrial Revolution made the apprenticeship system impossible. Partly because of the large market that already existed, partly because of the rapid expansion of the market during the first hundred years of the Industrial Revolution, and partly because the basic sciences of mathematics, physics, and chemistry were the earliest ones to be developed, the period before, say, 1880, was one of emphasis upon the development of productive capacity and one of the establishment of schools of technology of university grade. Education for the pecuniary-market aspects of business was largely confined to drill at secondary-school or even elementary-school levels in clerical and computing techniques. But between 1870 and 1890 the second phase of the Industrial Revolution was ushered in. Productive capacity began

to press upon market capacity at the same time that scientific knowledge began to mature in the social sciences and in the realm of practical administration.

In consequence, the period since 1880 has been the period of the scientific-management movement in industry; the time of the rise and development of cost-accounting literature; the era of the trust movement as a means of securing economy of production and control of markets. So also it has been the time, as regards our educational system, of the enormous spread of secondary commercial education, until today it includes perhaps 15 per cent of our total high-school attendance and rises to 60 or 70 per cent of this attendance in some of our larger cities; and—especially significant for our present purposes—it has been the time of the development of the collegiate schools of business in whose titles are to be found such words as "commerce," "finance," "accounts," and, especially in these later years, "administration." They have arisen to meet the need of training in the market-pecuniary aspects of business activity, just as in the earlier period schools of technology came into existence to meet the demand for training in the technological aspects of business.

#### TYPES OF COLLEGIATE COMMERCE SCHOOLS

As far as formal organization is concerned, the institutions offering collegiate training for business fall into a small number of fairly definite types: There is, first, the so-called graduate-school type, illustrated by Harvard and Stanford universities. These two have graduate schools of business in the sense that admission is open to holders of a baccalaureate degree, whether of an arts college, engineering school, business school, scientific school, or other recognized branch of American university education. The curricula of these schools may be thought of as being two-year curricula, although facilities for more extended study are announced. Harvard, in particular, announces a curriculum for a doctorate in business subjects. Second, there are two "undergraduate-graduate" schools—one at Dartmouth College and the other at the University of Michigan. These schools are also "graduate" schools in the sense that they admit holders of a baccalaureate degree, but they are undergraduate schools in the sense that they admit properly qualified seniors. The curricula are to be thought of as two-year curricula.<sup>1</sup> Third, there is a large number

<sup>1</sup> The four institutions thus far mentioned are sometimes referred to as the four "graduate" schools of business. This term should not be understood to mean that their offerings are "graduate" in the sense that they presuppose an undergraduate

of colleges which offer a two-year undergraduate course in business (the junior and senior years), admitting students who have completed the first two years of college. Ordinarily certain subjects are "recommended" for these first two years, and occasionally some are "required." It is a fair general statement, however, to say that this type of collegiate school of business builds a two-year professional course upon a two-year liberal-arts preparation. Fourth, another large group of colleges maintains a four-year undergraduate curriculum, admitting students directly from the high school to the professional school of business. There is really little difference between the work of this group and that of the two-year undergraduate schools, for, almost without exception, the four-year schools require the equivalent of two years of liberal-arts work (whatever that may mean), and most of them put the bulk of this liberal-arts work in the freshman and sophomore years.

It is an interesting and somewhat puzzling fact that up to the present time no American school has required a three-year business curriculum (the standard practice in European universities), although several two-year undergraduate schools and several four-year undergraduate schools *recommend* one year of graduate work, generally as a year of specialization. It is reasonable to expect that the not distant future will see three-year business curricula definitely established. Indeed, at the time of writing, one school has voted to set up a three-year curriculum, and another is known to be moving in that direction. In the matter of the three-year curriculum, as is frequently the case in American collegiate education, the degree question rises to haunt the innovator. Shall the three-year school of business (junior year, senior year, one graduate year) confer only the bachelor's degree? only the master's degree? both the bachelor's and the master's degree? In the discussion of the policy of an extended curriculum these peacock feathers keep obscuring the really vital issues at stake.

In 1916, in accord with the usual practice of professional schools, the American Association of Collegiate Schools of Business was formed, to promote and improve higher business education in North America. This organization established at the outset standards of admission as one means of stimulating improvement in the quality of the work of collegiate schools of business. These standards, as modified in May,

curriculum in business; nor should it be understood to mean that other institutions do not offer "graduate" work in business. Such universities as Pennsylvania, Illinois, and Chicago (to cite only three examples) have a considerably larger group of "graduate" students than has any one of these four except Harvard.

1925, are given in full in the following footnote.<sup>2</sup> They indicate the current code of practice in this unit of our higher educational system. As of 1925-1926, the association had 38 members. At a guess, from 50 to 60 of the nearly 200 existing organizations could meet the modest requirements of the association.

### INFLUENCE UPON COURSES IN ECONOMICS

As was indicated earlier, the full significance of the movement for collegiate education for business is not seen when one takes into account only the formally organized schools. The last fifteen years have

<sup>2</sup> The following is a statement of the standards applied when a collegiate school of business applies for admission to the American Association of Collegiate Schools of Business:

1. The college or school shall require for admission at least fifteen units of secondary work as defined by the North Central Association of Colleges and Secondary Schools, or its equivalent.

2. The school shall require for the undergraduate degree the completion of a minimum quantitative requirement of one hundred and twenty semester hours of credit or the equivalent. A portion of this work may be taken in some other college, as a liberal-arts college of approved standing.

3. The school shall have been established as a bona fide division of a college or university whose credits are accepted at full value by members of the Association of American Universities or the Association of American State Universities, and its affairs shall be administered under the control and with the active support of such college or university.

4. The school shall have been established and operated in accordance with the standards indicated herein for a period of at least three years; but a school which has been in operation for not less than three years, and which may have failed, in that period, to meet all the requirements herein stated, may, at the discretion of the executive committee, be admitted to membership whenever such requirements have been fulfilled by the school.

5. The faculty of the school shall include at least three teachers of full professorial rank, giving full time, or nearly all their time, to instruction in courses offered in the curriculum of the school; in general, the majority of all teachers on the faculty shall give the greater part of their time to such instruction.

6. Those holding full professorial rank shall have the doctor's degree, or their professional or technical training and experience shall be such as will enable the executive committee of this association to give them a rating equal to those who have received doctor's degrees. In general, all teachers of business subjects in collegiate schools of business above the grade of assistant shall have a master's degree, or their training and experience shall be such that the executive committee of this association gives them a rating equal to those who have the master's degree.

7. The school shall maintain a scale of teachers' salaries which, in the judgment of the executive committee, is adequate to the successful conduct of the work of a high-grade school of business.

8. The school shall have so apportioned the teaching load of members of its staff that the teaching burden will not be excessive. In general, teachers should not teach elementary work in excess of fifteen hours a week and advanced work in excess of twelve hours a week.

9. All collegiate schools shall offer a reasonable amount of work in at least five groups of study, such as business finance, accounting, business law, marketing, and statistics.

10. At least 40 per cent of the one hundred and twenty credit hours or its equivalent required for the bachelor's degree must be taken in commercial and economic subjects; a liberal proportion of the courses in this group shall be professional in character in that they deal with problems of management or administration.

11. At least 40 per cent of the one hundred and twenty credit hours or its equivalent required for the bachelor's degree shall be taken in subjects other than economics and commerce, provided that general economics and economic history may be counted in either the liberal or commercial groups.

12. The school shall have such library facilities as are, in the judgment of the executive committee, adequate.

seen the demand for this type of education influence the presentation of economics more profoundly than that presentation has been influenced by any or all other movements. College presidents seeking instructors in economics nearly always ask for a man who can teach in the "practical" fields; announcements of elementary courses in the principles of economics now quite frequently contain a statement to the effect that the course is designed to serve as an introduction to the study of business. Not a few professional workers in economics expect to see business education make profound contributions to economic theory as well as to our knowledge of practical fields.

As for the actual offerings of courses in our colleges and universities, an enormous expansion has occurred in "business subjects." Table I, "Comparison of Offerings by Subjects, 1910-1911 and 1925-1926," indicates the character of this expansion during the period from 1910-1911 to 1925-1926. The total hours offered in 1925-1926 were 4.6 times the hours offered in 1910-1911. The subjects which fell below this average rate of increase are those ordinarily regarded as "orthodox" economic offerings. The business subjects had a rate of increase far above the average. Even foreign trade had in 1925-1926 more hours than all "various business courses" had in 1910-1911, and the number of hours in marketing, business law, business finance, and business organization is staggering. These four subjects were credited with more hours in 1925-1926 than all economic and business subjects had in 1910-1911. Accounting alone had, in 1925-1926, 1.4 times as many hours as all economic and business subjects (including accounting) had in 1910-1911.

It must not be supposed that this enormous development in business instruction has been confined to the many colleges which have established formal schools or curricula of business. Even the smallest colleges, with only a few offerings in "economics," tend to travel the same path.<sup>3</sup> If one excludes from consideration the institutions which are members of the Association of Collegiate Schools of Business, a study of the catalogues of 55 colleges offering from 3 to 7 courses in economics, 56 colleges offering 8 to 12 courses, 38 colleges offering 13 to 16 courses, 29 colleges offering over 17 courses, 58 colleges for women, and 20 colleges for negroes — this list certainly constituting a sufficient sample of our higher-education institutions — shows roughly the following order of popularity of courses in this field: elementary economics and problems, labor, money and banking, business organization, ac-

<sup>3</sup> A full discussion of the offerings in economics in the United States is available in an article by L. C. Marshall, "Offerings in Economics, 1925-1926," in the *Journal of Political Economy*, 35: 573-612, October, 1927.

TABLE I. COMPARISON OF OFFERINGS BY SUBJECTS, 1910-1911 AND 1925-1926<sup>4</sup>

| SUBJECT   | HOURS<br>OFFERED<br>1910-1911 | HOURS<br>OFFERED<br>1925-1926 | 1925-1926<br>HOURS<br>DIVIDED BY<br>1910-1911<br>HOURS |
|---|-------------------------------|-------------------------------|--|
| Elementary course . . . . .   | 27,202                        | 51,405                        | 1.9  |
| Elementary problems . . . . .                                       | 6,182                         | 8,410                         | 1.4  |
| Elements and problems combined .                                    | 33,384                        | 59,815                        | 1.8  |
| Advanced theory, including history<br>of economic thought . . . . . | 7,206                         | 16,523                        | 2.3  |
| Social reform . . . . .   | 3,240                         | 3,648                         | 1.1  |
| Social control . . . . .  | —*                            | 2,820                         | —*   |
| Trusts . . . . .  | —*                            | 4,164                         | —*   |
| Trusts, corporation finance, etc. . .                               | 4,845                         | —*                            | —*   |
| Economic history . . . . .  | 8,232                         | 23,054                        | 2.8  |
| Geography and resources . . . . .                                   | 4,200                         | 16,739                        | 4.0  |
| Economics of agriculture . . . . .                                  | 798                           | 8,876                         | 11.1   |
| Money, banking, credit . . . . .                                    | 8,121                         | 31,892                        | 3.9  |
| Labor . . . . .   | 4,780                         | 21,846                        | 4.6  |
| Transportation . . . . .  | 5,517                         | 19,965                        | 3.6  |
| International relations, including<br>tariffs . . . . .             | 1,134                         | 3,042                         | 2.7  |
| Government finance, including fi-<br>nancial history . . . . .      | 8,409                         | 16,194                        | 1.9  |
| Statistics . . . . .  | 1,836                         | 15,645                        | 8.5  |
| Accounting . . . . .  | 5,692                         | 86,116                        | 15.1   |
| Business courses . . . . .  | 12,426                        | 160,245                       | 12.9   |
| Business finance . . . . .  |                               | (26,795)                      |  |
| Personnel administration . . . . .                                  |                               | (5,436)                       |  |
| Risk and insurance . . . . .  |                               | (14,375)                      |  |
| Marketing . . . . .   |                               | (41,947)                      |  |
| Foreign trade . . . . .   |                               | (13,969)                      |  |
| Production . . . . .  |                               | (7,896)                       |  |
| Business organization . . . . .                                     |                               | (21,093)                      |  |
| Business law . . . . .  |                               | (28,732)                      |  |
| Total . . . . .   | 113,027                       | 521,198                       | 4.6  |

\* Data not comparable in this case.

counting, business finance, economic history, business law, government finance, transportation, marketing, geography and resources, statistics, risk, advanced theory, foreign trade, production, trusts, social control, social reform, personnel administration, international relations, economics of agriculture, teaching of economics, real estate. After elementary economics (which is, of course, given by practically every

<sup>4</sup> The hours offered are computed by multiplying the number of hours per week by the number of weeks in a given course. Multiple-section courses and courses offered more than once a year are counted but once.

institution examined), of the first ten subjects as listed in order of frequency of offering, five are distinctly business subjects.

It may be noted in passing that the matter of the appropriate relationship between a school of business and a department of economics is one of the outstanding problems connected with the development of collegiate education for business. It is obvious that there should be an appropriate amount of coöperative action and even consolidation of the two, — this to be accompanied by an appropriate amount of separation so that neither will be hampered in making its contributions. But what is the content of the word "appropriate"? No one knows, and considerable differences of opinion have been expressed. The outstanding fact is that coöperative action and even consolidation are at present the characteristic situation. Sharp separation is almost nonexistent.

#### MAIN FEATURES OF THE CURRICULUM OF THE COLLEGIATE SCHOOL OF BUSINESS

It is a commonplace of educational work that a first essential in the organization of a curriculum for any unit of the educational system is the setting up of its objective, for only a clearly visualized objective can provide the standard against which curricular projects may be measured.

As might be expected, it is only now that those in responsible charge of collegiate schools of business are becoming clear, articulate, and generally agreed upon the appropriate objectives, or ends, of these institutions. In the period of hectic growth, time was not always taken to formulate objectives. In not a few cases "schools" or "curricula" or "courses" were started as ventures in financial opportunism rather than as educational ventures. In some of these instances the business school was desired because of its ability to make a net financial contribution to the general university budget; in others, because it aided in securing from a parsimonious legislature funds with which to maintain work in economics or sociology or political science; in others, because its presence facilitated the securing of funds from local business men; in still others, because "every other university was starting a school of business, and we must meet the competition for students," — a too common attitude in American educational circles.

Then, too, the fact that the American collegiate school of business is typically an offspring of the liberal-arts college (the department of economics usually serving in the dual capacity of father and midwife) has tended toward a certain befogging of the objectives of the new enterprise. Partly because of their own bent of mind, partly because



they sought to clothe the newcomer in a garment of respectability which would make it more pleasing to the liberal-arts faculty, those responsible for the child tended to state its objectives primarily in terms of the ends of *general* education (which they might properly have assumed) and quite secondarily in terms of the ends of *business* education. In printed catalogue statements, as well as in the utterances of responsible executives, there were too frequently weak platitudes and "selling talk" rather than clear-cut statements of educational objectives in terms of which detailed curricula could be worked out.

Of course, the movement was not without its clear-eyed leaders, who saw the necessity of a correct aim, with the result that not a few of the announcements of the new schools faced the issue clearly and contained clear-cut objectives of business education. Partly because of the crystallizing effect of such statements, partly because of the natural clearing of minds as the movement progressed and thinking and planning developed, the situation at the present time is one which makes possible a fairly clear and simple statement of educational objectives, — objectives that may be said to have general adherence. The results of a questionnaire sent to several hundred instructors, deans, and presidents in institutions having schools of business indicate that the following would today be generally accepted as the objectives of these schools.

Stated in terms of subject matter and method, these schools should devote themselves to the study and presentation of the fundamental processes, conditions, and forces of business, with quite incidental attention to minor techniques. Stated in terms of preparation for vocations, they should aim to prepare men with a social point of view to become (1) responsible business executives or (2) professional or technical experts such as accountants, statisticians, commercial secretaries, and members of governmental regulatory bodies. They should seek to give the students a background of business statesmanship and a perspective of social values that will enable their graduates to shorten the inevitable period of apprenticeship.<sup>5</sup>

<sup>5</sup> The results of this questionnaire are set forth in full in the *University Journal of Business* for April, 1927. The detailed vote on certain more significant issues was as follows:

| PROPOSED OBJECTIVE                          | VOTING<br>YES | VOTING<br>NO | DOUBTFUL | TOTAL |
|---|---------------|--------------|----------|-------|
| Preparing persons for executive positions?  | 235           | 13           | 26       | 274   |
| Preparing persons for professional careers? | 244           | 12           | 23       | 279   |
| Preparing persons for routine positions? .  | 42            | 157          | 40       | 239   |
| Preparing persons to make money? . . .      | 59            | 127          | 44       | 230   |
| Giving a social point of view? . . . . .    | 233           | 15           | 22       | 270   |

Once it is understood that, in terms of the number of institutions affected, almost 80 per cent of the movement for collegiate education for business has taken place since 1915; that the development has been under such auspices that only today is a clear and definite statement of the objectives of the collegiate school of business becoming generally accepted; that the movement has been so popular (or so pressingly needed, as the case may be) that it has not been under the necessity of fighting its way to recognition by dint of hard thinking, careful planning and open-minded experimentation, — once these things are realized, it becomes easy to understand why such a small proportion of the curricula of these institutions are educationally sound or even self-consistent and coherent.

The curriculum of the collegiate school of business may, for present purposes, be surveyed under three headings: admission requirements, requirements for graduation, and total offerings. In the interests of brevity it is expedient to survey these matters as manifested by the membership of the American Association of Collegiate Schools of Business, for these institutions may properly be regarded as examples of the best current practice; and since the two "graduate" schools and the two "undergraduate-graduate" schools are the only examples of these forms of organization, it is permissible merely to include them in the tabulations, confining the discussion to the thirty-four "undergraduate" schools, which may be taken to be representative (or, more accurately, to be the best examples) of the one hundred and eighty or more institutions of this type.

*Admission requirements.* The story of admission requirements is one which may be told quite briefly. In the 1925-1926 membership of the American Association of Collegiate Schools of Business there were twelve two-year schools which admitted students who had completed two years of college work. These institutions recommend or suggest certain courses for the first two years, especially English composition, elementary economics, with scattering mention of such subjects as accounting, foreign language, money and banking, geography, science, mathematics, or social science. But, in general terms, the only *requirement* is the equivalent of two years of college work.<sup>6</sup>

A question as to whether the curriculum should be drawn for the purpose of giving broad general training for business or for the purpose of giving training for particular business pursuits yielded the following replies: in favor of broad general training, 170; in favor of both types, but chiefly broad and secondarily special, 103; in favor of special training, 6; total, 279. Over against these replies is to be placed the fact of heavy actual offerings of narrow courses.

<sup>6</sup> In the *University Journal of Business* for July, 1927, a more extended discussion of these admission requirements may be found.

TABLE II. ADMISSION REQUIREMENTS SET BY THE TWENTY-TWO MEMBERS OF THE AMERICAN ASSOCIATION  
OF COLLEGIATE SCHOOLS OF BUSINESS WHICH MAINTAIN (1925-1926) A FOUR-YEAR COURSE<sup>7</sup>

|  | ENGLISH | FOREIGN<br>LANGUAGE                           | SCIENCE | GENERAL<br>MATHE-<br>MATICS | ALGEBRA | GEOMETRY | SOCIAL<br>SCIENCE<br>INCL.<br>HISTORY | GROUP REQUIREMENTS   | ELECTIVES   | LIMIT IN<br>VOCATIONAL<br>SUBJECTS |
|--|---------|---|---------|-----------------------------|---------|----------|---------------------------------------|--|-------------|------------------------------------|
| Boston University . . .                      | 3       | Or History<br>other than<br>U.S. <sup>2</sup> | —       | —                           | 1       | —        | Or Foreign<br>Language 2              | —  | 9           | —                                  |
| Georgia School of Technol-<br>ogy . . .      | 3       | 2   | 1       | —                           | 1       | 1        | Hist. 1                               | —  | 6           | 3                                  |
| New York University . . .                    | 3 or 4  | —   | —       | —                           | 1       | —        | —                                     | 3 in one—Mod. L., Math., Soc. Sc.<br>2 in one—Mod. L., Math., Soc. Sc.   | 5 or 6<br>4 | —                                  |
| Ohio State University . .                    | 3       | 3   | 1       | —                           | 1       | 1        | Am. Hist. 1<br>Soc. Sc. 1             | —  | —           | —                                  |
| Southern Methodist Uni-<br>versity . . . . . | 3       | 3 (one) or<br>2 (two)                         | —       | —                           | 2       | 1        | Hist. 2                               | —  | 4           | —                                  |
| Syracuse University . . .                    | 3       | 2 (one)                                       | —       | —                           | 1       | 1        | Hist. 1                               | —  | 7           | 4                                  |
| Tulane University . . .                      | 3       | 2 (one)                                       | —       | —                           | 1½      | 1        | Hist. 1                               | —  | 7½          | —                                  |
| University of California . .                 | 3       | 2 (one)                                       | 1       | —                           | 1       | 1        | Hist. 1                               | —  | 7           | 3                                  |
| University of Chicago . .                    | 3       | —   | —       | —                           | —       | —        | —                                     | 3 or more in one: Lang., Sc., Math., Soc. Sc.<br>2 or more in one: Lang., Sc., Math., Soc. Sc.<br>2 or less: Lang., Sc., Math., Soc. Sc. | 5           | 5                                  |
| University of Cincinnati . .                 | 3       | 2 (one)                                       | —       | —                           | 1       | 1½       | Hist. 1                               | —  | 8½          | 5½                                 |
| University of Denver . . .                   | 3       | 2   | 1       | —                           | 1       | 1        | Hist. 1<br>Hist. 2                    | —  | 6           | —                                  |
| University of Georgia . . .                  | 3       | —   | —       | 2½                          | 1       | 1        | —                                     | —  | 5½          | —                                  |
| University of Illinois . . .                 | 3       | —   | —       | —                           | 1       | 1        | —                                     | —  | 10          | —                                  |
| University of Kentucky . .                   | 3       | —   | —       | —                           | 1       | 1        | European<br>Hist. 1                   | —  | 10          | —                                  |
| University of Nebraska . .                   | 3       | 2 or 3  | 1       | 3 or 2                      | —       | —        | Am. Hist. 1<br>Soc. Sc. 1             | —  | 5           | —                                  |
| University of North Carolina                 | 3 or 4  | 4 (two)                                       | —       | 2½ or 3                     | —       | —        | Hist. 1                               | —  | 3 or 4½     | —                                  |
| University of Oregon . . .                   | 3       | 2 (one)                                       | 1       | —                           | 1       | 1        | Am. Hist. 1<br>Soc. Sc. 1             | —  | 5 or 8      | —                                  |
| University of Pennsylvania                   | 3       | 2 (one)<br>or Science or<br>Math. 1           | —       | —                           | —       | —        | Hist. 1                               | 4 of 8 elec. come from Eng., Soc. Sc., Sc.,<br>Lang., Math.  | 8           | 3½                                 |
| University of Southern<br>California . . .   | 2       | 2 (one)                                       | 1       | —                           | 1       | 1        | Am. Hist. 1                           | —  | 7           | 3                                  |
| University of Virginia . .                   | 3       | —   | —       | —                           | 1½      | 1        | Hist. 1                               | 3 Lang., Soc. Sc., or 2 if 3 in Math.,<br>2 Lang., Soc. Sc., 1 in Typewr.  | 5           | 4                                  |
| University of Washington . .                 | 3       | —   | —       | —                           | 1       | 1        | —                                     | —  | —           | —                                  |
| University of Wisconsin . .                  | 3       | Or Sc. or<br>Hist. 2                          | —       | —                           | 1       | 1        | Or For. Lang.<br>or Sc. 2             | —  | 8½          | —                                  |

<sup>7</sup> Expressed in terms of high-school units.

As of 1925-1926 there were in the association 22 schools which admitted students directly from high schools. The accompanying Table II shows the admission requirements of these 22 institutions in detail. As is at once apparent, and as is to be expected in American colleges and universities, the admission requirements of this particular division of higher education differ in but a negligible way from the admission requirements applicable to any other division. They are in reality "college-admission requirements" rather than "school of business admission requirements." Entrance is based upon 15 high-school units, of which about 7 may be said to be elective (in two cases 10 are elective), and the student who desires to do so may take a considerable number of these electives in high-school commercial subjects, since the limitations upon vocational offerings are by no means to be regarded as severe.

*Total offerings.* The story of total offerings may also be quickly told. The accompanying Table III presents the offerings of the 38 members of the association as of 1925-1926, the data being secured from the catalogues of the schools concerned, and checked by correspondence. This table presumably shows what material is "officially" thought to be suitable for the work of collegiate schools of business. If we judge by the frequency with which particular subjects are offered,

... the position of first importance is held by accounting, money and banking, and elementary economics. Quite important, but still not of first rank, are labor, foreign trade, transportation and traffic, geography, government finance, economic history, insurance, advanced theory, advertising and selling, risk, and personnel administration. Of medium importance are production, public utilities, trusts, land and real estate, and social reform. Social control and international relations are at the bottom of the list. It is not unsafe to hazard a guess that this ranking is the consequence of the American school of business parentage in economics and sisterhood with the liberal-arts college rather than the result of a mature consideration of the objectives and appropriate tools of business education.<sup>8</sup>

*Graduation requirements.* The requirements for graduation are of course highly significant in that they indicate the prevailing official enforcements with respect to the irreducible minimum of "business subjects." In general terms, no matter what type of school is examined, the requirement for graduation is "two years" of work taken from the total offerings of the school, such specific subjects being required as are indicated in the accompanying Table IV, made up of:

<sup>8</sup> This quotation is taken from the *University Journal of Business* for July, 1927, which contains a more extended analysis of the offerings of these institutions.

in the first group, the 22 four-year "undergraduate" schools; in the second group, the 12 two-year "undergraduate" schools; and in the third group, the 4 "undergraduate graduate" and "graduate" schools.

Confining our attention again to the 34 "undergraduate" schools, we observe the following points:<sup>9</sup>

1. In from 31 to 34 institutions there are required English, elementary economic theory, accounting, and law.

2. In from 11 to 24 institutions there are required financial organization, foreign language, mathematics, history, manager's administration of finance, statistics, markets, physical environment, science, government, general business organization, and psychology.

3. In fewer than 10 institutions there are required social control, advanced economic theory, labor, personnel, risk, production, social science, thesis, public finance, and business policy, with but scattering requirements in philosophy, Bible, railways, transportation, public utilities, advertising, speech, economic reform, office appliances, and credits and collections.

It is interesting to set over against this *actual* situation a statement of prevalent opinion with respect to what *ought* to be required for graduation. A questionnaire dealing with the problem was sent out to several hundred deans and instructors in schools of business, and 292 replies came in from 75 different institutions, — a sufficient return to indicate that the views expressed are fairly representative. Briefly stated, the returns from the questionnaire ran thus:

1. About 87 per cent of the replies were in favor of requiring English composition, accounting, money, banking, financial organization of society, principles of economics, history, government, mathematics, statistics, psychology, the market in modern society, risk and uncertainties including business cycles, and law.

2. From 75 per cent to 81 per cent of the replies were in favor of requiring English literature, manager's administration of finance, risk administration, the worker in modern society, personnel administration, and the administration of production.

3. From 62 per cent to 72 per cent of the replies were in favor of requiring public finance, international economic relationships, market administration, social background of modern production, earth science, physics, economic aspects of social organization, chemistry, biological science, social-control material, and modern foreign language.

The data of actual practice are not strictly comparable with the data secured from the questionnaire, for the questionnaire asked whether

<sup>9</sup> See the *University Journal of Business*, July, 1927, for a more detailed analysis of requirements for graduation.

each given subject should be required at *some* level of the educational system from the junior high school up. But even making allowances for this situation, there is obviously a wide difference between actual practice and prevailing opinion in this matter of requirements. Psychology, for example, is approved as a required subject by 89 per cent of those replying to the questionnaire, but is actually required by only 32 per cent of the members of the association. Corresponding figures in a few other cases are as follows: labor, 78 per cent and 18 per cent; personnel administration, 76 per cent and 6 per cent; production, 75 per cent and 9 per cent; risk, 88 per cent and 9 per cent. Especially interesting is the fact that *administrative* courses (which one would naturally think to be of the essence of training for business administration) are not heavily required in actual practice.

It is far from easy to explain why the actual situation with respect to minimum requirements is what it is. In some institutions the business curriculum is apparently the result of a compromise between a liberal-arts faculty and a school-of-business faculty, and it has, in consequence, coherence neither from the liberal-arts point of view nor from the business point of view. Too frequently courses have been put in the required list because of the personal influence or connections of some instructor who has long taught that particular subject matter. Cases are not infrequent in which an inexperienced man, chosen suddenly to organize a new school of business, has made a hasty survey of existing catalogues, used his "judgment" (prejudices?) concerning what courses would be "good for students preparing for business," set up a curriculum, gathered a staff, and begun work all within a period of months. With some honorable exceptions, it is perhaps not too severe a judgment to say that the faculty and administrative staffs of our nearly 200 collegiate schools of business are only now getting even an articulate philosophy, good or bad, concerning the organization of the curriculum.

It seems reasonably clear that

there have been few if any cases in which a standard has been used for evaluating the contribution of a given field or subject matter. Whether this is due to a lack of definiteness of purpose on the part of the business faculty or to an inability to throw off the influence of the liberal-arts course (an inability has been evident throughout the development of the school of business), the general absence of a standard of valuation has militated against the development of coherent curricula for business education. Few persons would argue for rigid standardization of curricula in the present stage of the development of business education. The time for that has not yet arrived; probably it never should arrive. But it would seem that the time has arrived for the establishment of standards for the inclusion or rejection of given bodies of instruc-

TABLE III. TOTAL OFFERINGS (1925-1926), BY MEMBERS OF THE AMERICAN ASSOCIATION OF COLLEGIATE SCHOOLS OF BUSINESS<sup>1</sup>

|                                   | Undergraduate Degree | Graduate Degree   | Elementary Economics | Problems | Advanced Theory | Economic History | Money and Banking | Business Finance | Labor | Personnel Administration | Social Reform | Social Control | Trusts | Public Utilities | Government Finance | International Relations | Risk, Cycles, Forecasting | Insurance | General Marketing | Foreign Trade | Advertising and Selling | Statistics | Accounting | Transportation and Traffic | Production | Business Organization | Business Law | Geography and Resources | Psychology | English | Teaching | Secretarial Work | Mathematics | Language | Land and Real Estate | Economics of Agriculture | Miscellaneous |     |
|-----------------------------------|----------------------|-------------------|----------------------|----------|-----------------|------------------|-------------------|------------------|-------|--------------------------|---------------|----------------|--------|------------------|--------------------|-------------------------|---------------------------|-----------|-------------------|---------------|-------------------------|------------|------------|----------------------------|------------|-----------------------|--------------|-------------------------|------------|---------|----------|------------------|-------------|----------|----------------------|--------------------------|---------------|-----|
| Boston University                 | B.B.A.               | M.B.A.            | 90                   |          |                 | 60               | 105               | 135              | 60    | 30                       |               | 30             | 30     |                  |                    |                         | 30                        | 30        | 120               | 300           | 540                     | 90         | 660        | 120                        | 60         | 90                    | 360          | 60                      | 270        | 675     |          |                  | 180         | 1140     | 30                   |                          | 420           |     |
| Georgia School of Technology      | B.S. in C.           |                   | 108                  | 54       |                 | 72               | 108               | 378              |       |                          |               |                |        |                  |                    |                         | 54                        | 162       | 342               |               | 396                     |            | 756        | 72                         | 144        | 360                   | 216          |                         | 72         |         |          |                  | 108         | 108      |                      |                          |               |     |
| New York University               | B.C.S.               | M.C.S.            | 108                  | 144      | 72              | 108              | 576               | 602              | 72    | 144                      | 72            | 72             | 72     | 144              | 324                | 72                      | 144                       | 400       | 360               | 396           | 1190                    | 216        | 1224       | 180                        | 324        | 432                   | 216          | 540                     | 72         | 468     | 540      | 36               | 144         | 1620     | 144                  |                          | 1548          |     |
| Ohio State University             | B.S.                 | A.M.              | 120                  |          | 432             | 108              | 516               | 168              | 156   | 180                      | 36            |                | 36     | 348              | 168                | 36                      |                           | 444       | 624               | 180           | 180                     | 216        | 924        | 384                        | 288        | 108                   | 216          | 360                     | x          | 72      | 108      | 72               | x           |          | 36                   |                          | 1512          |     |
| Southern Methodist University     | P.A.                 |                   | 108                  |          |                 | 162              | 216               | 108              |       | 108                      |               |                |        | 36               | 54                 | 54                      |                           | 18        | 216               |               | 216                     | 54         | 594        | 54                         | 108        | 108                   | 360          |                         | 108        | 54      | 216      |                  |             |          |                      | 54                       |               |     |
| Syracuse University               | B.S. in C.           |                   | 108                  |          | 216             | 108              | 252               | 162              | 54    | 54                       | 54            |                | 54     | 108              | 54                 | 54                      | 54                        | 180       | 180               | 216           | 414                     | 162        | 702        | 486                        | 54         | 180                   | 144          | 216                     | 216        | 252     | 270      | 612              | 324         | 216      | 180                  |                          | 108           |     |
| Tulane University                 | B.B.A.               |                   | 108                  |          |                 | 216              | 288               |                  | 324   | 324                      |               |                |        | 108              | 72                 | 72                      | 54                        | 54        | 342               |               | 72                      | 504        | 216        | 216                        | 108        | 108                   | 306          | 108                     | 216        | 216     |          |                  |             |          |                      |                          |               |     |
| University of California          | B.S.                 |                   | 108                  |          | 324             | 288              | 144               | 72               | 288   | 162                      | 54            |                | 54     | 108              | 72                 | 72                      | 54                        | 378       | 144               | 378           | 36                      | 126        | 630        | 288                        | 300        | 360                   | 180          | 360                     | 180        | 120     | 420      | 120              |             |          |                      | 60                       | 420           |     |
| University of Chicago             | Ph.B.                | A.M. Ph.D.        | 60                   |          | 60              | 240              | 600               | 540              | 600   | 300                      | 60            | 120            | 60     | 60               | 360                | 60                      | 120                       | 60        | 480               | 60            | 60                      | 120        | 180        | 780                        | 300        | 60                    | 360          | 180                     | 360        | 180     | 120      | 420              | 120         |          |                      |                          |               |     |
| University of Cincinnati          | C.E.                 |                   | 108                  | 108      |                 |                  | 144               | 216              |       |                          |               |                |        |                  |                    |                         |                           | 280       |                   |               |                         | 108        | 280        |                            | 108        | 234                   | 108          | 54                      | 126        | 252     |          | 252              | 90          | 288      | 36                   | 108                      |               |     |
| University of Denver              | B.S. in C.           | M.S. in C.        | 54                   |          | 90              | 162              | 126               | 144              | 54    | 36                       |               | 36             |        | 18               | 126                |                         | 36                        | 216       | 90                | 36            | 126                     | 108        | 684        | 36                         | 36         | 126                   | 108          | 54                      | 126        | 252     |          | 252              | 90          | 162      | 216                  | 468                      |               |     |
| University of Georgia             | B.S. in C.           | M.S. in C.        | 108                  |          | 36              | 108              | 108               | 108              | 36    | 36                       | 36            |                |        | 108              | 108                |                         | 144                       | 108       | 108               | 108           | 54                      | 432        | 216        | 36                         | 36         | 108                   | 108          | 108                     | 108        | 126     |          |                  | 162         |          |                      |                          |               |     |
| University of Illinois            | B.S.                 | Ph.D.             | 144                  |          | 360             | 252              | 234               | 252              | 198   | 54                       | 36            |                | 54     | 144              | 234                |                         |                           | 108       | 504               | 342           |                         | 198        | 1332       | 630                        | 144        | 144                   | 162          | 522                     |            | 72      |          |                  |             |          |                      |                          |               |     |
| University of Kentucky            | B.C.                 |                   | 108                  |          | 90              | 216              | 54                |                  | 54    |                          |               |                |        |                  |                    |                         | 108                       | 54        | 54                |               | 90                      | 54         | 360        | 54                         |            | 54                    | 108          | 54                      |            |         |          |                  |             |          |                      | 90                       |               |     |
| University of Nebraska            | B.S. in B.A.         | Ph.D.             | 108                  |          | 108             | 108              | 108               | 126              | 54    | 60                       | 54            | 54             | 54     | 36               | 108                | 36                      | 54                        | 108       | 234               | 36            | 144                     | 180        | 396        | 36                         | 54         | 144                   | 128          | 180                     | 120        | 108     |          | 252              | 108         |          | 72                   | 54                       | 108           |     |
| University of North Carolina      | B.S. in C.           | M.S. in C.        | 120                  |          | 180             | 60               | 210               | 150              | 60    | 60                       | 60            | 60             |        | 120              | 120                | 60                      | 120                       | 120       | 270               | 150           | 210                     | 60         | 540        | 120                        | 90         | 108                   | 120          | 120                     | 36         | 108     |          |                  |             |          |                      | 180                      |               |     |
| University of North Dakota        | B.S. in C.           | M.S. in C.        | 54                   | 54       | 54              | 162              | 54                | 108              | 54    | 54                       | 54            | 54             |        | 54               | 54                 | 54                      | 54                        | 108       | 162               | 108           | 54                      | 414        | 108        | 162                        | 108        | 162                   | 342          | 54                      | 108        | x       | x        | 54               | 108         |          | 240                  | 54                       | 216           |     |
| University of Oregon              | B.B.A.               | M.B.A.            | 96                   |          | 36              | 108              | 108               | 168              | 228   | 120                      | 48            |                | 48     | 96               | 96                 | 48                      |                           | 72        | 60                | 72            | 192                     | 84         | 528        | 288                        | 396        | 144                   | 36           |                         | 108        | 60      |          |                  |             |          |                      | 324                      |               |     |
| University of Pennsylvania        | B.S., B.A.           |                   |                      |          |                 |                  |                   |                  |       |                          |               |                |        |                  |                    |                         |                           | 576       | 216               | 234           | 216                     | 108        | 630        | 522                        | 288        | 144                   | 378          | 450                     | 144        | 36      |          |                  |             |          |                      | 72                       |               |     |
| University of Southern California | B.S., B.A.           | M.B.A.            | 162                  | 72       | 72              | 72               | 90                | 180              | 36    | 72                       |               |                |        | 108              | 54                 |                         | 72                        | 360       | 270               | 180           | 144                     | 558        | 270        | 216                        | 108        | 162                   | 72           | 126                     | 54         | 72      | 36       | 126              |             |          |                      | 288                      |               |     |
| University of Virginia            | B.S. in C.           |                   | 108                  |          | 108             | 216              | 108               |                  | 108   |                          |               | 108            | 108    | 108              | 108                | 108                     | 60                        | 108       | 108               | 108           | 108                     | 432        | 108        | 108                        | 108        | 108                   | 216          | 60                      | 108        | 180     | 120      | 96               |             |          |                      | 108                      |               |     |
| University of Washington          | B.B.A.               | M.B.A.            | 155                  |          | 312             | 180              | 456               | 360              | 60    | 60                       |               |                | 108    |                  |                    |                         | 60                        | 120       | 624               | 360           | 240                     | 120        | 840        | 456                        | 120        | 360                   | 108          | 60                      | 108        | 36      | 180      | 120              | 96          |          |                      |                          | 108           |     |
| University of Wisconsin           | B.A.                 |                   | 144                  |          | 72              | 108              | 126               | 216              | 54    | 54                       |               |                |        | 72               | 162                |                         | 54                        | 162       | 54                | 72            | 54                      | 342        | 108        | 180                        | 36         | 144                   | 108          | 60                      | 108        | 36      | 180      | 120              | 96          |          |                      |                          | 108           |     |
| Columbia University               | B.S.                 | M.S. Ph.D.        | 108                  |          | 108             | 36               | 972               | 324              | 216   | 252                      | 108           | 180            | 54     |                  |                    |                         | 558                       | 504       | 252               | 954           | 297                     | 1296       | 432        | 180                        | 216        | 324                   | 918          | 54                      | 108        | 54      | 108      | x                |             |          |                      | 144                      | 468           |     |
| Indiana University                | B.S. in C. and F.    | M.S. in C. and F. | 108                  |          | 36              | 144              | 144               | 216              | 108   |                          |               | 54             |        | 36               | 108                |                         | 72                        | 72        | 108               | 72            | 378                     | 54         | 414        | 126                        | 144        | 108                   | 270          | 162                     | 234        | 126     | 144      | 54               |             |          |                      |                          |               |     |
| Northwestern University           | B.S. in C.           | M.B.A.            | 144                  |          | 54              |                  | 108               | 198              | 162   | 270                      |               | 54             | 108    |                  | 54                 |                         | 108                       | 54        | 576               | 198           |                         | 216        | 576        | 108                        | 162        | 234                   | 144          |                         | 54         | 36      |          |                  |             |          | 216                  |                          |               |     |
| University of Iowa                | B.A., B.S.           | Ph.D.             |                      |          |                 |                  |                   |                  |       |                          |               |                |        |                  |                    |                         |                           |           |                   |               |                         |            |            |                            |            |                       |              |                         |            |         |          |                  |             |          |                      |                          | 108           |     |
| University of Iowa                | B.S. in C.           | M.A.              | 108                  |          | 270             | 72               | 144               | 108              | 108   | 36                       | 72            | 54             | 27     | 90               | 90                 |                         | 108                       | 72        | 108               | 54            | 72                      | 54         | 936        | 306                        | 108        | 27                    | 72           | 72                      |            | 54      | 144      | 54               |             |          |                      | 36                       |               |     |
| University of Iowa                | B.S. in C.           | Ph.D.             |                      |          |                 |                  |                   |                  |       |                          |               |                |        |                  |                    |                         |                           |           |                   |               |                         |            |            |                            |            |                       |              |                         |            |         |          |                  |             |          |                      |                          |               |     |
| University of Kansas              | B.S. in B.           | M.B.A.            | 90                   |          | 126             | 180              | 144               | 126              | 90    | 54                       | 54            |                | 54     | 36               | 108                |                         | 36                        | 54        | 144               | 54            | 54                      | 342        | 126        | 54                         | 54         | 54                    | 36           | 36                      | 108        | 36      |          |                  |             |          |                      | 144                      |               |     |
| University of Minnesota           | B.S. in B.           | M.S. in B.        | 180                  |          | 324             | 324              | 168               | 324              | 180   | 72                       |               |                | 36     | 180              | 108                |                         | 36                        | 108       | 270               |               | 36                      | 168        | 564        | 108                        |            | 36                    | 108          | 108                     | 252        | 36      |          | 216              | 72          |          |                      | 468                      |               |     |
| University of Missouri            | B.S. in B.A.         |                   | 90                   |          | 198             | 36               | 198               | 144              | 90    |                          |               |                |        | 36               | 108                | 54                      | 54                        | 108       | 36                | 54            | 108                     | 108        | 198        | 54                         | 54         | 108                   | 108          | 108                     | 108        |         |          |                  |             |          |                      | 90                       |               |     |
| University of Missouri            | B.S. in B.A.         |                   | 90                   |          | 162             | 54               | 144               | 108              | 54    |                          |               |                |        | 36               | 108                | 54                      | 54                        | 108       | 90                | 648           | 108                     |            |            |                            | 54         | 162                   | 270          | 378                     |            |         | x        | 54               |             |          | 54                   |                          |               |     |
| University of Oklahoma            | B.S. in B.           |                   | 108                  |          | 108             | 180              | 252               | 288              | 180   | 72                       |               |                |        | 54               | 54                 |                         | 54                        | 180       | 108               | 108           | 108                     | 504        | 108        | 216                        | 72         | 432                   | 108          | 108                     | 108        | 108     | 72       | 72               | 324         |          |                      |                          | 36            |     |
| University of Pittsburgh          | B.S.                 |                   | 108                  | 72       | 144             | 180              | 252               | 288              | 180   | 72                       | 108           | 36             |        | 36               | 108                |                         | 72                        | 36        | 144               | 180           | 144                     | 180        | 576        | 72                         | 36         | 108                   | 108          | 108                     | 108        | 108     | 72       | 72               | 324         |          |                      |                          | 108           |     |
| University of Texas               | B.B.A.               | M.B.A.            | 108                  | 108      | 324             | 144              | 108               | 180              | 162   | 72                       | 108           | 36             |        | 36               | 108                |                         | 72                        | 144       | 180               | 144           | 180                     | 576        | 72         | 36                         | 108        | 108                   | 108          | 108                     | 108        | 108     | 72       | 72               | 324         |          |                      |                          | 108           |     |
| Washington University             | B.S.C.               | M.S.C.            | 216                  |          |                 |                  | 216               | 216              | 162   | 54                       |               |                |        | 54               | 54                 |                         | 54                        | 108       | 234               | 216           | 108                     | 270        | 648        | 54                         | 216        | 54                    | 108          | x                       |            | 54      |          |                  |             |          |                      |                          | 162           | 54  |
| Dartmouth College                 | M.B.A.               | M.C.S.            |                      |          |                 |                  | 72                | 162              | 54    | 108                      |               |                |        |                  |                    |                         |                           | 108       | 234               | 216           | 108                     | 270        | 648        | 54                         | 216        | 54                    | 108          | x                       |            | 54      |          |                  |             |          |                      |                          |               | 36  |
| University of Michigan            | M.B.A.               |                   | 108                  |          | 324             | 108              | 108               | 216              | 216   | 108                      | 54            | 144            | 54     | 54               | 108                |                         | 54                        | 108       | 234               | 216           | 108                     | 270        | 648        | 54                         | 216        | 54                    | 108          | x                       |            | 54      |          |                  |             |          |                      |                          |               |     |
| Harvard University                | M.B.A.               |                   |                      | 54       | 108             | x                | 216               | 162              | x     |                          |               | x              |        |                  |                    |                         | x                         |           | 324               | 270           | 108                     | 216        | 432        | 324                        | 270        | 108                   | x            |                         | x          |         | 43       |                  |             |          |                      |                          |               | 240 |
| Stanford University <sup>2</sup>  | D.C.S.               | M.B.A. Ph.D.      |                      |          |                 |                  |                   | 48               |       |                          |               | 48             |        |                  |                    |                         |                           |           |                   |               |                         |            | 48         |                            | 96         |                       | 48           |                         |            |         |          |                  |             |          |                      |                          |               |     |

<sup>1</sup> The figures were obtained by multiplying the meetings per week by the number of weeks in the course. A semester is counted as eighteen weeks; a quarter as twelve weeks. Duplicate sections are not counted.<sup>2</sup> The Stanford offerings for 1925-1926 covered but one year of the two-year course.

The cross (x) means that work in this field is offered but that the announcement of the school was not of such a character as to indicate precisely what number of hours was regarded by the school as constituting its requirement.

tional material in the required list. If foreign language is to be included in the required course of study for the future business executive, the reasons for its inclusion ought to be as specific as the reasons for the exclusion of production by 31 institutions — if the latter position is defensible.<sup>10</sup>

The foregoing account of the curricular organization of the collegiate school of business may be summarized thus: (1) this school has no distinctive entrance requirements, though this was to be expected in the American educational system; (2) its total offerings are large and varied; they are beginning to take a form that will serve the needs of university business education, although in the past they have been too largely the results of "scissors and paste" selections from the offerings of other divisions of the university, and too little the outgrowth of mature planning to meet well-considered objectives of business education; (3) with a few noteworthy exceptions collegiate schools of business are just beginning to construct coherent requirements in terms of well-considered objectives.

A critic of this situation (in which there is certainly much to be criticized) will do well to bear in mind the extreme youth of the movement, its unwholesomely rapid development, and the fact that even semiscientific and objective outlooks upon any type of education are so recent that time has not sufficed for their findings to be of much service to the leaders of business education. In such a situation the future rather than the past of business education should be the main subject of reflection. There are many promising signs for the future. The administrative officers and the members of the instructing staffs of these schools are fully aware of the significance of curricular matters,<sup>11</sup> and are coming to be in agreement concerning the necessity of setting up standards (ever to be studied and improved) against which to measure specific curricular projects. Current opinion with respect to the method of arriving at standards for determining what subject matter should be *required* work is reflected in the summary of replies to a questionnaire given on the following page. These replies, taken with a 195 "yes" vote on the question whether the pervasiveness of a particular business activity should be regarded as an appropriate touchstone for determining whether a course of instruction in the activity should be required, with the replies referred to earlier concerning the appropriate objectives of collegiate business education, and with a 237 "yes"

<sup>10</sup> *The University Journal of Business*, April, 1927.

<sup>11</sup> Recently, in several hundred letters from these persons, there were more than one thousand statements concerning outstanding problems in collegiate business education. Almost six hundred of these statements dealt with the curriculum directly, and many others dealt with it indirectly.



vote to the question whether courses in social control, economic organization, etc. should be required on the ground of pervasiveness, are highly indicative that the period of hectic growth of collegiate schools of business is now to be followed by a period of constructive scientific work in curriculum organization.

| SUGGESTED STANDARD FOR DETERMINING WHAT<br>SUBJECT MATTER SHOULD BE REQUIRED                             | VOTING<br>YES | VOTING<br>NO | DOUBTFUL | TOTAL |
|--|---------------|--------------|----------|-------|
| Checking with European practice . . . .  | 58            | 88           | 104      | 250   |
| Checking with American practice . . . .  | 121           | 44           | 88       | 253   |
| Job analysis of work of business executives<br>and professional men . . . . .                            | 206           | 17           | 34       | 257   |
| Studying business organization and litera-<br>ture to ascertain pervasiveness of func-<br>tion . . . . . | 240           | 9            | 16       | 265   |
| Securing opinions of business men . . . .  | 149           | 18           | 94       | 261   |

#### THE SITUATION WITH RESPECT TO INSTRUCTION

Admission requirements, total offerings, and requirements for the degree are of course but the dead body of collegiate education for business. The living spirit is to be found in the instructing staff, the materials of instruction, and the opportunities afforded to students for stimulating, creative work. While such matters do not lend themselves readily to statistical analysis, something may be done by way of portrayal.

*The instructing staff.* — As matters stand today there is lamentable weakness in the instructing staffs of the collegiate schools of business.

Such a statement admittedly has little meaning until some sort of standard has been set up against which to measure the existing situation. In the field of personnel administration, it is submitted, a first-class instructor in a first-class professional school could make good use of fundamental training in the fields of psychology and psychiatry, physiology, economics, law, quantitative method, — especially as found in accounting and statistics, — and industrial management. He should have contact with European problems and experience in the field, as well as ready command of French and German. He should have had responsible business experience, preferably in the field of his specialty. The need of effective personality and scholarly insight is so obvious that their mention is in an apologetic aside. And there is nothing peculiar about the field of personnel administration. Such fields as marketing, business finance, risk and risk-bearing, production control, and social control of business activity are all either "borderland"

fields, touching several scientific disciplines, or new fields in which men of the highest training and standards should be relied upon for instructional work.

The actual situation falls far short of the ideal here pictured. If a visiting scholar from Mars were to make the rounds of the nearly two hundred colleges and universities which allege that they have instructing staffs in business, he would find the general situation all but incredible. In scores of these institutions he would find the bulk of the instruction given by men having the scientific maturity that could reasonably be expected of holders of master's degrees in this country, and frequently their training is not much greater than that given by the better grade of undergraduate schools of business. The academically trained incumbents of such positions are usually products of a department of economics, or of a graduate faculty in business that is not greatly different from a department of economics, although occasionally English, psychology, or law are drawn upon for available timber. Let us confine our attention to the case of the incumbent trained in economics; this discipline is admittedly the most important single background for business teaching, although business is vastly more than applied economics. Now, at the best the current product of a graduate department of economics tends to be narrowly trained in the social sciences, almost ignorant of the bearing of other sciences, relatively ignorant and sometimes supercilious of business operations, and innocent of any experience in a responsible business position. This is the product at its best. Even at its actual mediocrity there has been such an enormous demand for it in the rapidly expanding schools of business and departments of economics, that our graduate departments of economics find difficulty in holding a graduate student (especially the able student of good personality) long enough to confer a doctor's degree upon him. As intimated earlier, holders of master's degrees and even of bachelor's degrees are in great demand. Such training would be inadequate enough in an old and established field in which sound, scientific literature was abundant. It becomes ludicrously inadequate in a new instructional field in which the literature is abundant but far from scientific.

A common device for supplementing the usual academic staff is that of drawing in men from business for occasional lectures, or for the discussion of problems, or even for courses in fields in which they have special skill or experience. This plan, when intelligently followed through a period of years long enough to make possible a good selection of "outside lecturers," has been demonstrated to have distinct possibilities. When, however, as is not seldom the case, it is a device

for currying favor with some possible wealthy donor, its merits are not in the instructional field. And it must be said too that American business life has not ripened sufficiently and has not sufficiently developed professional ideals to enable it to produce large numbers of business men competent to serve as instructors in schools of business. Men of satisfactory training, experience, aptitudes, and attitudes do exist here and there, and a few such persons have been taken into business faculties, but they are the exception and not the rule.

It is worthy of parenthetical remark that the preceding paragraph carries not the slightest intimation that contact with actual business experience is unimportant for members of the instructing staff. On the contrary, it is of vital importance; and one of the moot problems of the school of business is the amount of outside work to be permitted for "regular" members of the staff. The differences of thought on the matter correspond to those that have arisen on a similar issue in the professional schools of law and medicine. There are those who contend that only "full-time" men should be members of the staff; that making it possible for an instructor to serve both God and Mammon is in theory vicious and in practice fatal to scholarly productive work; that the needed clinical work and practical business experience (which are admittedly absolutely necessary) must be secured through universities becoming wise enough (1) to send instructors out into field work and into business experience at university expense and (2) to pay salaries large enough to enable instructors to gather some needed experience and to establish some contacts at their own expense. There are others who, admitting unfortunate incidents in past attempts, contend that it is possible to administer a school of business in such a way that an instructor will retain the kind of private professional practice that will make him a competent instructor without stifling his scholarly productivity. There is at present no discernible tendency toward unanimity of opinion on this issue beyond general acceptance of the view that practically all the past cases in which an instructor has retained active business connections, have proved to be cases of capitulation to Mammon.

It will be observed that the foregoing statements with respect to the quality of the instructing staff have been in terms of a "general" situation in the almost two hundred schools. Over against this rather gloomy picture two statements of a more hopeful character may be made.

The first of these more hopeful statements is that in point of fact this hypothetical "general" situation is unreal. The truth is that some schools (in fact, most of them) have poor staffs, and a few schools

have better staffs if not good staffs, and the hope of the future rests in the fact that a certain number of schools can be depended upon to maintain good standards of instructing staff. But there is no blinking the fact that even in our better present-day schools the quality of the business staff is generally regarded as below the proper university level. The staffs at Harvard, Columbia, Chicago, and Pennsylvania may be taken as examples of the better type, but in general estimation these staffs are inferior to the staffs of first-class law schools or medical schools. To put the matter another way, one wonders whether more than a handful of the men who have professorial rank in our business faculties (not including the departments of economics) could hold a corresponding rank in a European university.

The second element of hopefulness of outlook is found in the fact that there are many features upon which a program of improvement can be based. The instructing staffs are genuinely interested in their work, — genuinely interested in developing collegiate education for business of high professional school standard. Their limitation is not one of interest but one of insufficient training. As only one example of the interest of the instructing staffs and their loyalty to educational work, may be cited the active movements of instructors in specialized fields to form organizations for interchange of opinions and for coöperative study. To cite an illustration from one of the older fields, there is an American Association of University Instructors in Accounting which holds an annual meeting (usually at the same time and place as the meeting of the American Economics Association) and publishes a quarterly, *The Accounting Review*, now in its second volume.

The raw material for good instructing staffs exists in considerable numbers. The institutions concerned are beginning to see the dimensions of the problem and to adopt appropriate measures for securing improvement. The spirit of the personnel concerned is really excellent. There is no sufficient reason why a reasonably near future may not see the somewhat depressing picture of the preceding pages turned to the wall.

*Materials of instruction.* — When it is remembered that the great majority of collegiate schools of business have been established within the last dozen years, when it is appreciated that the typical instructing staff has few instructors of adequate preparation, and when the weakness of the typical business curriculum has been recognized, it occasions no surprise that instructional materials are inadequate and instructional methods poorly developed. All too frequently the instructional material is either petty description of business techniques, gossip about "practical" business experiences, diluted economics, pseudo-

psychology, or solemn twaddle about "management." It must be evident without argument that the development, by 1925-1926, of 42,000 hours of instruction in "marketing" (including "advertising" and "selling"), in addition to 14,000 hours of instruction in "foreign trade" (the two together constituting half as much as the *total* economics and business hours offered in the country fifteen years earlier), is such a proliferation of "courses" that it is unreasonable to expect that adequate instructional material should be made available. This is particularly evident when an examination of catalogues reveals individual institutions offering as many as 1190 or 954 hours of instruction in advertising and selling, no course being counted more than once in these figures. If, however, any doubt concerning the poor quality of instructional material lingers in the mind, that doubt will be quickly expelled by an examination of the formal texts and other "business literature" which is pouring in floods from our printing presses. Its quantity is exceeded only by its mediocrity.

Of course there are, here and there, individual writers whose product does not deserve so harsh a judgment; and fortunately there are not a few evidences of improvement of quality as time goes by. But there is no denying that a problem exists.

Two institutions, the Harvard Graduate School of Business Administration and the School of Commerce and Administration of The University of Chicago, have set themselves *as institutions* the task of preparing considerable bodies of instructional material.

Harvard, accepting in general terms a functional approach to the analysis and presentation of business activities, sees a challenging opportunity in the preparation of large quantities of "case" material. These cases are published in a series of textual case books and in a series called *Harvard Business Reports*, or are generously made available in mimeographed form upon request. Harvard thinks of them as great masses of business data from which generalizations may one day emerge, and as a body of instructional material which is to have something of the validity in business education that the case system has in law. Large resources in finances and in personnel are lavished upon the enterprise, the Harvard group regarding this as a major device for placing business education upon a sound basis.

Chicago emphasizes the functional approach and is insistent upon the importance of understanding the social and physical background of business activities. Her instructional materials, published along with other studies in the series *Materials for the Study of Business*, contemplate instruction in such fields as finance, labor, risk, marketing, production, physical environment, social control, standards, rec-

ords and reports, and business communication. Whenever appropriate, the instructional materials deal with (1) the sociophysical background and (2) business administration. For example, in the financial field two bodies of material are being published, — one in the Financial Organization of Society and one in the Managers Administration of Finance. In this Chicago material numerous cases are used, but by no means to the exclusion of textual exposition, problems, and readings from various writers. Chicago is also interested in the development of social-science business material for use at high-school and junior-college level.

In addition to these instances in which the preparation of instructional material is in some sense institutionalized, there are several instances in which an institution or an individual has done constructive work in some restricted field. One illustration must serve for all. The University of Minnesota, in the process of organizing its curriculum, worked out a freshman course that has become available for general use in Black's "Production Economics."<sup>12</sup>

There has been no general acceptance of the instructional materials thus far made available either by institutions or by individuals. In this respect, as in so many other respects, collegiate education for business is merely in the process of emerging from the formative stage.

Granting the desirability of having the existing activities in the way of material preparation continue, there are at least three other promising lines of endeavor. In the first place, the time has presumably arrived when groups of instructors in specialized fields could well study coöperatively the Harvard material, the Chicago material, and the products of the various individual workers with a view to planning both better curricula and better materials of instruction. The accountants already have a committee at work at part of the task, and members of other groups have expressed interest in similar work. Accomplishment lags, however, for lack of funds to release men from instructional activities and to defray the expenses of committee meetings, and there is some considerable danger that such accomplishment as is achieved will have been insufficiently guided by modern educational technique. In the second place, the time is obviously ripe for pouring more of the content of European thought and experience in instructional matters into American curricula. In view of the prevalent inability of instructors in American schools of business to utilize foreign languages effectively, this may call for extensive translations. In the third place, there is a large opportunity for a daring piece of work in making syntheses of various types of instructional material. Today

<sup>12</sup> J. D. Black. *Introduction to Production Economics*. Henry Holt & Company, Inc., 1926.

law schools offer courses on the law of labor; departments of economics, courses on labor (usually trade unionism) and on the state in relation to labor; schools of business, courses on personnel administration; departments of psychology, courses on motivation and vocational testing. These instances will serve to illustrate the prevailing American tendency toward "courses" offered by specialists who do not even know the borderlands of their own subject, — a tendency that could have been illustrated from taxation, finance, marketing, risk, or any other subject as readily as from labor. Can there be question of the opportunity for a synthesis of materials of instruction that will lift the treatment of a given field out of the ruts of narrow formalism to the firm highway of reality?

*Student participation.* — It is a widely accepted fallacy in American educational circles that instruction instructs; of course, the truth is that the student gets what he gets, — what *he* gets. The instructing staffs of collegiate schools of business are not different from the instructing staffs of other educational units with respect to their acceptance of the fallacy indicated. The only point worth making is that perhaps it is reasonable to expect more of the schools of business staffs, since personnel administration is supposed to be one of their specialties. Whatever may reasonably be expected, the actual situation is that these schools have not led the way in "educational measurement and counseling." They have not made *unique* contributions in student selection, student adjustment, student participation, job placement, curriculum analysis, measured experimentation in curriculum making, personality development, or any of the other aspects of really significant educational measurement and counseling. Some things they have done; seized a golden opportunity they have not. As for their instructors in personnel administration, typically they have tried to peer beyond a distant horizon of business practices, negligent of the personnel problems before their very eyes in the institutions they serve.

In the absolutely basic matter of student participation in the learning process, various fragmentary and sporadic things have been talked of, and some things have been attempted. It is rather common for these schools to encourage students to work in some business during one or more vacation periods. Boston demands a year of satisfactory business experience before the degree is conferred; Harvard as an institution and scattering instructors elsewhere pin their faith to the case system of instruction; quite a number of institutions demand a senior thesis; Texas has a senior year in which "coöperative work" is possible; Cincinnati conducts whole-heartedly in the busi-

ness work the "coöperative" plan that she originally worked out in engineering; Chicago operates summer field courses on a regular instructional basis; individual instructors utilize various plans for challenging the student to creative work. But, after all, collegiate education for business has, as such, made no striking contributions in this field. It has done no better and no worse than other educational units, which is certainly damning it with faint praise. Perhaps the history of the movement has been too short and too occupied with other matters.

Presumably there are two main objectives in this matter of student participation in the learning process. One is concerned with securing participation in formal instruction and "book learning"; the other, with securing participation in the kind of activity that ranks as clinical work in medical schools. There is, of course, no single road — there are many roads — to either objective, and, as has just been indicated, not a few of these roads are already in use.

As regards securing participation in formal instructional activities, it may rather confidently be asserted that the roads now in use are traveled but lightly. In this unit of our educational system, as in the others, there is opportunity for constructive work by breaking away from the hackneyed, formalistic instructional methods so generally used, to give the student opportunity for true creative work. Comprehensive, cumulative, creative work should supplant the existing fragmentary, additive, formalistic "instruction" in "courses." It looks probable that opportunity for education depends upon getting rid of the type of "courses" characteristic of present-day "instruction."

As regards securing participation in practice work or clinical work, it is a pity that some institution does not conduct a carefully measured educational experiment to ascertain the value of the coöperative method in use at Cincinnati. At present there are available too many prejudiced opinions, both pro and con, and too few bits of objective, measured evidence concerning this very significant attack upon a basic educational problem. So also it is a matter of regret that some school does not take a leaf from the book of experience of the agricultural schools, and establish a business and then operate it. It is not difficult to picture a situation in which an experimental school could (1) study its local situation and determine upon an appropriate business for that locality, (2) determine upon an appropriate site, (3) organize the business, (4) operate the business, and (5) through later years use the record of what was done as case material and use the ever-changing situation as the basis of ongoing study and contact with actual business.



THE PLACE OF THE COLLEGIATE SCHOOL OF BUSINESS IN  
THE EDUCATIONAL SYSTEM

At first glance the position of the collegiate school of business in the American educational system seems quite definitely located. All but four of the existing schools are, to all intents and purposes, two-year undergraduate schools, the junior and senior year of "professional" work being placed upon a freshman and sophomore foundation of "liberal arts" work.<sup>13</sup> This prevailing practice is apparently in substantial accord with prevailing opinion with reference to what is desirable. Replies made by deans and instructors to the question, Would it be well to make a rather sharp distinction between general, or secondary, education (generally thought of as running from the end of the sixth grade to the end of the sophomore year in college) and collegiate education for business? were as follows: yes, 169; no, 58; doubtful, 41; total, 268.

Notwithstanding this apparent stability of the position of collegiate education for business, there are quite a few unsettled and troublesome issues in the case.

*Relationship to secondary education.*— The appropriate relationship of the collegiate school of business to secondary education has by no means been determined. In the first place, collegiate education for business shares with other units of higher instruction the bewildered uncertainty arising from the reorganization of the general educational system which seems likely to be forced by the rapid development of the junior high school and the junior college. Problems of admission requirements and of enforcement of prerequisites are already in evidence as a result of this reorganization. It may well happen that the graduation requirements of an undergraduate school of business will ultimately need to be shaped in terms not merely of subject matters administered by the school but rather in terms of actual student achievements from the time of the junior high school. In the second place, the collegiate school of business cannot wholly ignore the presence of secondary commercial courses, although, ostrich-like, it seeks the sand as much as it possibly can. Intellectually speaking, secondary education for business is a wretched thing which "is still in the grip of its inheritance from the 'business colleges' from which it so largely sprang. The curricula are *prima facie* clerk mills masquerading under the deluding name of commercial courses." What

<sup>13</sup> Of course, very many of these schools are technically four-year schools, and several of these strive to combine liberal-arts work with professional work throughout the four years.

is the responsibility of the collegiate school in such a case? It is doubtful whether the question can much longer be evaded. In the third place, irrespective of formal administrative organization, almost a revolution is occurring in the subject matter being offered in the basic social sciences at secondary-school level. Collegiate education for business must soon study the bearing of this situation upon the organization of its own curricula.

*Proper length of curriculum.*— Whatever may be the appropriate relationship of the collegiate school of business to secondary education, the issue remains as to whether a two-year business curriculum is sufficient. Presumably the curriculum will long continue to be a two-year curriculum among the weaker and smaller colleges, but the three-year curriculum is already under discussion among the stronger institutions. European experience with schools of business and American experience with other types of professional schools indicate that the movement for a three-year school of business is not to be regarded lightly.

*Relationship to liberal-arts colleges and to departments of economics.*— The problem of the relationship of the school of business to the department of economics has already been referred to. Its relationship to the college of liberal arts is an even more difficult problem. For one thing, these two units cannot serenely go their own separate ways. Not only is the school of business the offspring of the liberal-arts college, but its subject matter and the traditional outlook of its instructors lead to close relationships with the arts college. In these respects the school of business finds it more difficult to operate independently of the liberal-arts college than has been true of undergraduate schools of engineering. For another thing, there exists a very considerable amount of sentiment for confining business education to the graduate school. The tradition of the four-year arts college is strong (although once "vocational majors" are allowed for, it is a fair question whether there have actually been many cases of its existence), and it is quite an arguable position that the increasing complexity of society and the growing fund of knowledge call for four (or at least three) rather than two years of collegiate preparation before entering the school of business.

Then, too, the collegiate school of business has a serious problem to work out with the arts college in that a great number of the nearly two hundred institutions mentioned in this paper as being representatives of the movement for higher business education do not have true schools, but rather departments, of business administration, the student being really (whatever he may be technically) a "business

major" in an arts college. This may prove to be a serious matter for the arts college, and it certainly raises serious issues with respect to the development of true professional schools of business. If there is in the American educational system a legitimate place for such a professional school, what is the proper function of these departments, and what is their appropriate relationship to the professional school?

*Relationship to schools of law and engineering.*— Quite as puzzling is the problem of the appropriate relationship of the school of business to engineering education and legal education.

Business unmistakably has its technological side, and the administration of even its market-pecuniary aspects is usually handled effectively only by one who has an awareness of, and preferably a competence in, these technological problems. It is accordingly not surprising that universities in which both types of school exist are striving to work out methods of coöperation between them, while universities in which only one type exists ordinarily feel the need of presenting materials which will represent the other outlook. Nor is it surprising that schools of engineering are studying their curricula in an effort to have the economic-business features more adequately handled. As yet only one institution, the University of Cincinnati, has combined the two aspects of the work into a single college of engineering and commerce, and even in this institution it is a combination rather than a fusion.

So also business unmistakably has its problems of social control, and in these law bulks large. As yet there has been little true coöperation between schools of law and schools of business. The typical school of business offers a small amount of pigeonhole work in business law, the courses being conducted either by a member of its own staff or by a member of the law-school faculty. The typical school of law worries little about coöperation with any other division of the university, and least of all with this nondescript newcomer into the educational fold. And yet nothing is more common among the graduates of a school of business than a desire for a greater knowledge of law; nothing more common among the graduates of a school of law than a desire for a greater knowledge of economics and business.

The suggestion is ventured that there is here an opportunity for a great educational work. For the sake of brevity this opportunity is sketched but baldly and fragmentarily. Earlier it was suggested that an opportunity exists for a synthesis of instructional materials.<sup>14</sup> Carrying that suggestion a stage further, there is an interesting

<sup>14</sup> See page 103.

opportunity to conduct a *fusion* program, utilizing truly synthesized materials, in the junior and senior years of college for all who contemplate entering the law, business, and advanced work in economics (to cite only three of the possible cases); then the appropriate amount of graduate study could be undertaken in a school of law, a school of business, or a graduate department of economics, these graduate divisions giving true graduate work instead of the courses for graduate students which are now offered. It may be that the reorganization in our educational system now attendant upon the junior-high-school and junior-college movements will tempt some institution to try such an experiment.

*Relationship to graduate work.* — The thought of the preceding paragraph easily leads to the reflection that a serious problem of the collegiate school of business is that of graduate work. It is no criticism of the so-called graduate schools of business to say that they offer courses for graduate students; that is their correct mission at the present time. Conceivably this is all that business education should do in the realm of graduate work, — conceivably, but not probably. It is probable that the not distant future will see several institutions (including very likely some of the present "graduate" schools) turn quite seriously to the task of true graduate work in this field, — graduate work that will presuppose a much more adequate preliminary training than is current; graduate work of a creative type rather than the course-serving type. The opinion may be hazarded that if and when such a development occurs, it will be fortunate if the institutions undertaking the venture are as drastic in their outlook and actions as was Johns Hopkins when this university led the reform in medical education.

Surely few movements have swept through American higher education as rapidly as has collegiate education for business, and surely few have affected the educational system more profoundly. While it would be idle to deny that the youth and the rapid development of the movement leave it today with serious unsolved problems, it may confidently be asserted that it is vigorous, reasonably open-minded, and eager for improvement. It does not seem likely to disappoint the hope of its followers that it will play a worthy part in professional education and will make at least humble contributions to scientific knowledge.

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## CHAPTER V

### THE SCHOOL OF DENTISTRY<sup>1</sup>

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#### SALIENT GENERAL FACTS RELATING TO DENTAL EDUCATION IN THE UNITED STATES AND CANADA

Teeth, which are deficient in power of self-repair and have a surface that does not heal after injury, are more apt at an early age to become diseased or to be destroyed than any other part of the body. Their conspicuous share in facial comeliness, their important relation to vocal enunciation, their usefulness in the preliminary phases of nutrition, and their tendency, when defective, to admit or harbor germs that cause serious and often fatal maladies have given the teeth an exceptional status in health service, and the professional means for their care a special educational claim. Prevention of dental ailments, treatment and care of dental disorders, and artistic placement of functional, sanitary, and comfortable artificial substitutes for parts of deficient teeth or for teeth that have been removed are included in the practice of dentistry, which, like a specialty of medical practice, requires appropriate medical understanding but also demands unusual mechanical skill and keen æsthetic insight.

In the United States and Canada, where dentistry has attained the most advanced development and is highly organized and legally established as an independent profession, physicians are not qualified to practise dentistry, and, unless licensed also as dentists, seldom give attention to dental conditions, and then as a rule only in emergency. In the United States there are about 70,000 dental practitioners, and in Canada approximately 4000 — nearly half of the respective number of physicians. In both countries the number of dental practitioners is in general inadequate and their distribution very irregular.

<sup>1</sup> In the preparation of this chapter the author has made free use of his Report to the Carnegie Foundation, constituting, with a preface by President Pritchett, the *Bulletin on Dental Education in the United States and Canada*.

Public regulation of dental practice in North America is similar to that of medical practice. State and provincial laws not only require all applicants for a license to show proficiency before a state board of dental examiners but also frequently prescribe subjects of instruction that the examinations must include. The Dental Educational Council of America, consisting of five delegates each from the American Association of Dental Schools, the National Association of [State Boards of] Dental Examiners, and the American Dental Association, publicly rates the dental schools of the United States, and suggests ways and means for their improvement.

In the United States there are now thirty-eight schools devoted to the training of general practitioners of dentistry — a decrease from forty-six in 1921–1922. Originally most dental schools in North America, like a majority of the medical schools, were established as commercial enterprises. Lately, however, it has been found that the dental school, like the medical school, cannot be at the same time a commendable educational institution and a successful money-making organization. Accordingly in recent years the transformation of dental schools from the status of private ownership to membership in universities assumed cumulative force and urgency. In 1921 there were fourteen proprietary dental schools in the United States. Now all but six of the schools are parts of universities, three being in groups of associated health-service schools, three being independent, and none being proprietary.<sup>2</sup> Each of the independent schools seeks union with a university. In Canada there are five dental schools, each of which is contained in a university. The dental schools in North America, with a few exceptions, have independent faculties; nearly all occupy separate buildings; and all but one school are members of the American Association of Dental Schools, which meets once a year and publishes annual *Proceedings*.

In the United States and Canada all the dental schools require at least one year of approved work in an accredited academic college or the equivalent for admission to a four-year professional curriculum, or two academic years for admission to a three-year or a four-year curriculum, the professional degree being Doctor of Dental Surgery (D.D.S.) in all but three schools, which award instead the degree of Doctor of Dental Medicine (D.M.D.).<sup>3</sup> These degrees are equivalent.

<sup>2</sup> The proprietary dental school became extinct in the United States with the closure of the Cincinnati College of Dental Surgery at the end of the academic year 1928–1929. There are now six proprietary medical schools in the United States.

<sup>3</sup> The exceptions are the dental schools in Harvard University, Tufts College, and North Pacific College of Oregon.



The professional instruction in all dental schools includes courses in medical sciences, dental technology, oral medicine, and clinical dentistry. Each school has its own infirmary, in which every student, before graduation, receives direct and extended instruction in the procedures of a general dental practice and, under direct supervision, performs acceptably on patients a suitable number of the chief operations. The infirmary service for dental students is analogous in professional import to dispensary and hospital service for medical students; but in all cases, and unlike prevailing medical requirements, it is included in the work required for graduation, and affords more effectual instruction in the actual conditions of private practice.

In the university dental schools, at present, most of the courses in the so-called medical sciences are given under the auspices of, or with the assistance of, the medical faculties; as a rule to dental students in separate classes, usually in laboratories in the medical schools but often by the least experienced teachers in the medical departments. In most instances this service is accorded by medical faculties from requirements of economy and considerations of common sense in the coördination of the work of the respective universities; but because of traditional unconcern for dentistry and of failure to appreciate its true relation to human welfare, the coöperation of medical faculties is usually given grudgingly, often indifferently, and in some cases very poorly. The courses in oral medicine for dental students are commonly very superficial, even in universities, where also for dental students the clinical relationships with the medical school, hospital, and dispensary are nominal, in the main, or nonexistent. Nearly all the medical schools ignore clinical dentistry in the instruction of medical students.

As a direct consequence of increasing academic requirements for admission the attendance at the Canadian dental schools has decreased annually from 1249 in 1920-1921 to 376 in 1928-1929; in the United States schools, from 13,099 in 1922-1923 to 8184 in 1928-1929. In the United States schools the attendance in the *first-year* classes was greater in 1928-1929 than in 1927-1928, suggesting that the total attendance will soon increase annually in both countries. (See Tables VIII and IX for related statistical data.)

#### DENTISTRY PRIMARILY HEALTH SERVICE

The important relationships of dental education cannot be appreciated unless dentistry is envisaged as a division of *health service*, a term which, having obviously a broader significance than "healing art," may be used to designate collectively all special efforts to main-

tain or to promote health, to prevent disease, to restore health by treatment and the cure of sickness, and to ameliorate the discomfort, distress, and disability of incurable ill health. Dentistry is an important means to each of these ends. It should be clearly recognized that actualities rather than labels or symbols are the important factors in a consideration of this situation. It is helpful to recall that the term "medicine" is commonly used not only to signify the healing art in a broad academic sense but also to indicate particularly the practice of that part of the whole of the healing art that is usually taught to persons who receive the M.D. degree. "Healing art," as a term, does not logically include the application of means to prevent the occurrence of disease or to maintain health and normality, but medicine and dentistry are employing such agencies with increasing effectiveness in the most desirable extensions of their usefulness. "Practice of medicine" does not customarily include such factors in health conservation as dentistry, education for the prevention of disease, public-health administration, nursing, and pharmacy. By regarding the practice of these and also of several more restricted types of activity for the maintenance of health or for the prevention or cure of disease, together with medical practice, as divisions of health service (in the most general, comprehensive, and natural sense of the term)<sup>4</sup> instead of divisions of conventional medicine, one not only follows a logical and convenient course of reasoning but also ignores the insignia of professional vanities or useless partisanships, and obtains a clear indication of the proper position and the due recognition of the practice of dentistry as it is, and also as it may be extended.

Of conditions in Egypt, where the healing art first attained a marked degree of development, Herodotus wrote (450 B.C.) that although the country was "full of physicians" they restricted their practice to special fields, some to the abdomen, some to the eye, some to the teeth, and so on. Nearly 2500 years later the Preliminary Report of the Commission on Medical Education (1927) indicated that in 1925 of 147,010 physicians in the United States only 15,417 (10.5 per cent) limited their practice to a specialty. But this contrast becomes less striking, and loses some of its apparent significance, when it is recalled that in the United States there are approximately 70,000 practitioners of dentistry, which, although a specialty outside of the boundaries of

<sup>4</sup> Education for the prevention of disease, public-health administration, medical practice, dental practice, professional nursing, and pharmacy are important divisions of health service, but only one is restricted by statute and license to the physician. Training for general medical practice is not sufficient preparation for professional service in the other divisions.

statutory medical practice, today is more important as a means of health service than ever.

Before 1840 dental disorders, given only superficial attention, were everywhere included incidentally within the scope of medical practice, although much of the dental service consisted of extractions and repairs by unskilled operators such as barbers, and of adjustments and replacements by mechanics such as goldsmiths. In the United States, medical schools, the first of which was established in 1765, either ignored dental conditions or gave casual attention to extraction of teeth, although optional lectures on dental science and dental surgery had been given regularly, since about 1797, at the Medical School of Guy's Hospital in London. In 1837-1838 the first attempt in North America to give formal instruction in dentistry to medical students was made at the University of Maryland (then a proprietary medical school), but, failing to win the approval of the medical faculty, although conducted by one of the foremost dentists of the day, the course of lectures was discontinued during the same year. In 1839 leading dental practitioners in the United States, some of them physicians who limited their practice to the teeth and mouth, appreciating the need for more formal development of dentistry, endeavored earnestly to have it included within the scope of medical instruction, but medical faculties rejected the proposal on the ground that dentistry was not of sufficient importance to justify its admission. Regarding this judgment as unchangeable but adhering to their convictions, the dentists and physician-dentists who were thus rebuffed accepted the best of the remaining alternatives, and, having established the original dental journal (1839) and national society of dentists (1840), also founded the Baltimore College of Dental Surgery (1840), the first school of dentistry. These events marked the formal separation of dental practice from medical practice, and since 1840 dental schools have taught dentistry as an independent service.

The refusal of medicine to develop the dental aspects of medical practice was not only a phase of traditional disparagement of mechanical procedures in the practice of medicine but also a failure to envisage the scope and import of dentistry. In 1839 the prevention of disease had not yet appealed strongly to physicians, and the higher purpose to keep people well was subordinated to the more urgent aim to "get them out of misery." So far as getting patients out of dental misery was concerned, the prevailing medical view seemed to be that getting the aching tooth out of the patient was the quickest and most acceptable way; and since anybody could pull a tooth or break it off (which was cheerfully assumed to be the same), and as any mechanic

could insert a passable artificial substitute (just as a barber could cut hair and fashion a wig), dentistry as a vocation was unreservedly left to the few who might be disposed to follow it. But the steady development of dental practice regardless of continued medical indifference, and the extension of its usefulness for the prevention, cure, or alleviation of both local and general diseases have obviously made it a division of health service that is quite as important and responsible as some of the accredited specialties of medical practice. It is clear, also, that dentistry should be made the full service equivalent of an oral specialty of medical practice, the objective toward which dental leadership is now actively directing it.

Dentistry, as now projected, may be defined in broad terms as the division of health service that is devoted

- (1) to establishment of the principles, and
- (2) to application, in all forms and degrees,  
of scientific health service relating directly to the teeth and to the closely adjacent oral tissues, and indirectly to the welfare of other parts of the body and of the whole system;
- (3) to discovery of the correlations between dental and oral conditions and some systemic and communicable diseases, with special reference to observed effects of distant disorders on the teeth and closely adjacent oral tissues, and of dental and oral abnormalities on the health of the body as a whole;
- (4) to detection, and provisional diagnosis, of dental and oral symptoms that indicate the prevalence or imply the probable existence of ill health elsewhere in the body; and
- (5) to suitable supplemental advisory health service, including consultation with the patient's physician, based on such observations (3) or diagnoses (4).

In this view of an enlarged dentistry its practitioners would be trained to give the service not only of dental surgeons and dental engineers, as at present, but of oral sanitarians and oral physicians as well. Instead of examining only the teeth and mouth of a patient, as is now usually the case in a restricted view of their responsibility, dentists would also suitably inquire into and keep careful records of the state of the patient's health, particularly as it affects or is modified by conditions of the teeth and mouth. Dentists would plan their procedures to meet not only the local indications but also the possible requirements of extra-oral relationships; would also recognize and note the significance of outstanding symptoms of systemic and communicable diseases, and warn or advise the patient accordingly or explain his need for a physician's attention; and could effectively discuss,

with a physician, the oral conditions in their relation to a patient's general welfare. Prevention of disease at all ages would become an inherent and predominant motive. The frequency with which dentists are, and will continue to be, consulted for oral health service gives them special opportunity and occasion to note not only the occurrence of oral and systemic diseases but also the existence of correlations between them, and to help or guide patients accordingly.

There are those who believe that these desirable ends should be attained by calling dentistry "stomatology," making it a specialty of medical practice, and licensing only physicians to engage in it. But when it is recalled that there are about 70,000 practitioners of dentistry in the United States (nearly half the number of physicians, and more than four times the total number of specialists of medical practice), and that a continually increasing number of physicians and dentists will be needed, the reader who may agree that these improvements should be brought about, yet who knows that medical schools are tending to become overcrowded, will hesitate to draw the conclusion that dental schools should be closed, and that dentists should be trained to be general practitioners of medicine first and specialists in dentistry afterward (p. 126). Returns from 80 of the 88 North American medical schools for the academic years 1926-1929 indicate that, of the number of persons who applied for admission,

6420 were admitted, 3586 were not admitted, in 1926-1927.

6495 were admitted, 4519 were not admitted, in 1927-1928.

7014 were admitted, 5523 were not admitted, in 1928-1929.

Most of those who were not admitted were eligible, but the overcrowded conditions made their rejection unavoidable.

#### CONTRASTS BETWEEN MEDICAL EDUCATION AND DENTAL EDUCATION IN THE UNITED STATES

The earlier dental schools were named colleges of dental surgery because their founders regarded dentistry as a branch of surgery. For the same reason, the example, procedures, and methods of the medical schools having been closely followed, medical sciences were made the basic subjects in the dental curriculum, although the courses were adapted to the needs of dental practice. Gradually the dental schools, while adhering to the methods of medical schools, gave increasing attention to dental mechanics and to clinical practice in the infirmary, without materially diminishing the proportion of hours in the curriculum devoted to medical sciences. In the main, however, increasing

emphasis was placed upon technical proficiency in repair and replacement. During the years when aspiring American students went to Europe for the best instruction in medicine, Europeans, regarding "American dentistry" as the most expert and artistic, came to the United States to receive advanced instruction in dental practice.

These general conditions in dental education have continued, and American dental schools retain world leadership; but earnest students of the opportunity and responsibility of dentistry and of the obligations of dental schools have not been beguiled into complacency regarding the present status of dental education in North America. They realize that, despite the technical excellence of dentistry and the efforts of dentists to prevent dental diseases, dental education has failed to perform some of the most important functions for the development of dentistry as a division of health service, and has lagged behind medical education in very important respects.

Overemphasis on the technology of dentistry has tended to develop dental education primarily as a training in craftsmanship. To make the dental practitioner an expert in reparative and reconstructive procedures — a good dental mechanic, in short — has been the paramount purpose. In the attainment of this important aim a broad preliminary education has been mistakenly regarded by dental leadership, with notable exceptions, as a subordinate qualification, which, while perhaps theoretically desirable, was practically unnecessary and apt, from the length of time required for its acquisition, to delay the beginning of dental study until a period in the age of the student when his capacity for active development in manual dexterity had become impaired or lost. Immaturity and ignorance, with hypothetically superior neuro-muscular adaptability to digital training, have been preferred to relative maturity and wisdom, with greater degrees of understanding and capacity. Consequently the admission requirements of dental schools have been relatively low in academic quality, and until 1926–1927 graduation from a four-year high school, or the equivalent, or less was an acceptable minimum. Since 1926–1927, however, at least one year of approved work in an academic college or the equivalent has been a minimum requirement for the Dental Educational Council's Class A or Class B rating.

Dental education is now nearly fifteen years behind medical education in the enforcement of academic prerequisites. In 1914, when the Council on Medical Education made the admission requirement of at least one year of approved work in an accredited academic college essential for a Class A rating, 78 of the existing 106 schools were enforcing that standard. Since 1918 two years of such work have been

the minimum in nearly all reputable schools of medicine. As this extent of preliminary education is admittedly desirable for such medical specialties as laryngology, ophthalmology, otology, and rhinology, it should be equally valuable for dentistry as an analogous mode of health service.

The dental schools have relatively few whole-time teachers, and most of the more important teaching is done by comparatively inexperienced part-time instructors and demonstrators who are primarily interested in private practice. Slight regard for the value of a liberal education has been accompanied by failure to appreciate the importance of good teaching. As a consequence, in the work in dental technology, for example, education in physical and mechanical principles for the promotion of clear understanding, development of power of constructive imagination, and accumulation of mental resources of adaptability (in emergencies or under the stress of need for special or general improvement of methods or for the invention of means) is being subordinated to the immediate purpose of developing skill in technical mimicry. Practice in manual procedures, which is essential for the attainment of digital facility, is often carried to an enervating extreme. The instruction in dental technology, which is usually uninspiring and listless, and lacking in effectual organization, is characterized by unprofitable repetition, chiefly because many of the teachers who are practitioners on part-time and half-hearted service have only empirical knowledge of their subjects, and proceed as they might if they were training apprentices in tinkering. Dawdling characterizes the mental and physical reaction of many of the students and instructors in the technical laboratories, and as a consequence much time is wasted that might be saved under a more effectual and intensive system. In these respects most of the dental schools resemble the majority of the medical schools of about twenty years ago, before the influence of proprietary management had been eliminated.

One of the most striking contrasts between medical and dental schools, viewed collectively, is the vigorous activity in research in the former and the weak interest in original investigation in the latter. Most of the medical schools display keen and lively effort to discover the nature of the conditions, factors, and influences that sustain health, or that induce deficiency, or that afford the most effectual means of controlling or curing disease; and the teachers maintain an aggressive and ardent endeavor to formulate the problems of medical science and art, and to solve them. The dental schools show high appreciation of new appliances, implements, and operative procedures, give alert attention to the invention of better instruments, and manifest

active interest in devices of value in dental practice; but, with a few notable exceptions, the teachers have very hazy conceptions of the biological problems of dental science and of the pathological criteria of oral health service, and exhibit little inclination or ability to open new paths to the undiscovered truths of either. In medical schools during the past fifteen years, coincident with increasing endowments, the interest in research has grown so strong, and its rewards in professional distinction have become so great and alluring, that individual teachers in increasing numbers are shirking the duties of instruction on the pretext that the prospective importance of their investigations justifies disregard of the immediate needs of their students. In dental schools, on the other hand, there is no imminent danger of any impairment of the quality of the instruction because of undue absorption in research.

Although research has not yet become a strong influence in dental education, it is slowly receiving more attention. Sections of the International Association for Dental Research, which was founded in 1920, have been organized in Ann Arbor, Boston, Chicago, Halifax, Minneapolis, New York City, Philadelphia, Pittsburgh, St. Louis, San Francisco, and Toronto, where they consist chiefly of workers in the local dental schools. At the last annual meeting of the Research Association, at Chicago, in March, 1929, to which two full days were devoted exclusively, thirty-six papers were subjected to animated and instructive discussion. Abstracts of these papers were published in the *Journal of Dental Research*, the association's official medium of publication, which, now in its ninth volume, has been issued bimonthly during the past two years instead of quarterly as before, to meet the needs of the increasing number engaged in research.

These impressive differences between medical and dental schools are due in part to the higher plane of general education upon which medical teaching has been adjusted, to the greater appreciation among medical teachers of the sciences upon which modern health service is based, to the broader view, in medical schools, of the application of the related sciences (to all parts of the body except the mouth), and to the clearer vision of the future needs and opportunities of the profession. The reasons for the contrast become clearer, and some of the measures for the improvement of teaching and research in dental schools become more evident, when it is considered, further, that many of the teachers of medical sciences and of clinical medicine in universities, who occupy positions of commanding influence and coöperate with dental faculties more or less unwillingly, underrate both the importance of dentistry and its intellectual quality. Not only have these medical teachers been indifferent to the problems of oral health and



dental practice, but, owing to traditional prejudice or to ignorance, they have also continually disparaged dental research as devoid of systemic significance.

The foregoing unfavorable contrasts with medicine and others that might be detailed are due in large degree, also, to very indifferent attention to dental schools in universities compared with that accorded to medical schools. Dental education cannot achieve its greatest degree of usefulness until the universities, accepting dental practice as an important division of general health service, give their dental schools adequate financial support, raise the quality of dental teaching to the high plane of excellence that its responsibility requires, promote both graduate work and research in every aspect of oral health service, and set before dentistry the loftiest ideals of professional character and attainment. Notwithstanding the fact that nearly all the dental schools in the United States are parts of universities, the needs of dental education have been receiving only casual attention in most of them. Boards of trustees, misled by the financial achievements of the private owners of various schools before their absorption into universities, kept in ignorance of the pressing needs of dental education, and influenced by the view that dentistry is rather a trade than a profession, have assumed that dental schools may be acceptably conducted on a low educational plane at a high profit as financial investments for their institutions. Medical schools are neither expected nor required to be even self-sustaining. In some cases they have been regularly financed in part with "earnings" from the operation of associated dental schools.

A phase of the neglect of dental schools in many of the universities is indicated by the lack of suitable libraries in their dental buildings or by the deficiency of dental books and dental journals in their general libraries. At one university, where the dental school has been avowedly conducted for financial profit, it was said recently that the dental library had been neglected because the dental teachers themselves did not want a library. This idea had been suggested by the fact that as recently as 1920 the Dental Educational Council's requirements for a Class A rating included the provision that, although the school should have a library, it would be adequate if the number of books equaled twice the number of enrolled students. One naturally assumes that university control means something better than this, but more than one university has been content barely to meet such minimum requirements.

Medical and dental schools are very similar in certain traditional tendencies, which should have the earnest attention of their faculties,

There is urgent need for great improvement in the quality of teaching in medical and dental schools, and for a complete reorganization of their programs. The medical curriculum and the dental curriculum are essentially those of fifty years ago overlaid with numerous scientific and clinical specialties and their redundancies, the load upon the student having become almost unbearable and the fundamental sciences quite detached from their applications. Each curriculum should be reconstructed from the standpoint of practice rather than theory, and its excesses eliminated, so that the student, whether medical or dental, may be led into technical knowledge largely through its applications, and the bulk of the whole may be reduced to a quantity that can be economically presented, effectually taught, and thoroughly assimilated.<sup>5</sup> Instead of developing the curriculum as an educational kaleidoscope, in a prolonged, wasteful, and impossible effort by superficial means to train the student, by the time of his graduation, to be as well informed and competent as an expert physician or dentist, it should be designed rather to prepare him to accomplish the attainable — to initiate safely a dependable general practice, and, by encouraging him to remain an earnest student, to facilitate his rapid growth in capacity through self-instruction and experience.

In their emphasis on the importance, for the student, of early practical contacts with the patient, the dental schools have presented a superior advantage that medical students seldom enjoy. Every dental school has an infirmary, which is the analogue of the dispensary and hospital in medical education. Direct chair-side treatment of patients, under conditions closely similar in all significant respects to those of private practice, has been a fundamental procedure in dental education since the establishment of the first dental infirmary in the Baltimore

<sup>5</sup> Recently, in a published address to the students in a university medical school, a member of the Council on Medical Education of the American Medical Association and also of the Commission on Medical Education, which is now giving special attention to these problems, referring to present deficiencies, said that "in a certain school, the coagulation of the blood was taught thirteen different times to a single class of students, with some little difference each time. . . . If we could have not more time for the curriculum, but a more complete and intelligent use of the student's time without too much needless repetition, we could go much further in our undergraduate curriculum. . . . We have had [are having?] a hard time in the medical course [curriculum] in getting rid of the operators and of the specialists who want to stress the refinements of their specialties. There is enough to learn without this in the ordinary routine work of medicine and surgery in the undergraduate course [curriculum]. . . . Success in medical practice does not depend on how much you know. Success depends on how much you can apply to the particular person who comes to you seeking relief. . . . Medicine is throwing off outworn facts, and ten years from today you can no longer depend on what you consider complete at the present time."

College of Dental Surgery in 1846. During the era of commercialism in dental schools the purpose of proprietors to obtain large financial profits from infirmary fees and the imperative need of the students for practical experience in reparative and restorative dentistry met on this common ground, to the great advantage of the prospective practitioner. At present, in a large majority of the dental schools the clinical instruction is sincere, intensive, and the most effectual in the curriculum. Its chief faults are inadequate application of the medical sciences and deficient correlation with clinical medicine. The infirmary presents an exceptional opportunity to the earnest dental student to teach himself clinical dentistry as he understands its scope, and to overcome in some degree the many handicaps arising in weak schools from inadequate presentation of the principles of physics and mechanics, insufficient education in æsthetics, poor preparation in the medical sciences, and indifferent instruction in the relationships between medicine and dentistry. The dental school, by bringing the student into intimate association with the patient relatively early in the curriculum, facilitates a much closer integration of the courses than the faculties have fully realized, and presents conditions that should encourage the development of the most stimulating instruction. A varied chair-side experience during the last two years in an extended clinical service enables the student to attain a high grade of proficiency. In the best schools he acquires a readiness to begin a dependable practice *by the time he graduates* that is rarely achieved to the same degree by the medical student, unless a prolonged supplementary hospital training is included in his preparation. In these important respects dental education is notably superior to medical education.<sup>6</sup>

The dental schools have exerted a very important influence for the development of health service that medical schools should emulate. For many years dentists, taught the importance of early discovery and correction of defects, have had the active coöperation of their patients in periodic examinations for the detection and treatment of dental dis-

<sup>6</sup> The Preliminary Report of the Commission on Medical Education indicates the existence of strong dissatisfaction with "the methods of teaching in the hospital period, when the interne sees patients cared for almost entirely by specialists; when extensive laboratory and other studies are made upon a large number of the patients; when the chief reliance for diagnosis is placed upon x-rays and laboratory procedures; when mostly serious and unusual illnesses are seen — *all of which tends to give the student an erroneous impression of medical practice* and to make him hesitant to begin practice outside of large medical centers. *Evidently this period of training has certain disadvantages in fitting a student to enter medical practice* in communities where these facilities and personnel — specialists, hospitals, laboratories, technicians, nurses, social-service departments, physiotherapists — are not available." [Page 48; italics not in the original.]

orders in their incipency and for the repeated application of measures intended to prevent or delay the development of disease. For children, in whom most dental abnormalities and defects may be prevented, arrested, or cured, the importance of this precautionary procedure cannot be overstated. These desirable efforts in private dental practice exemplify an ideal of health service — to keep people well — that has not yet appealed strongly to the average practitioner of medicine, who, manifesting little active concern about prevention of illness among his clientele, seldom gives them personal advisory health service when they are not sick. The extraordinary success of medicine in the general control or prevention of many communicable diseases, whereby multitudes have enjoyed complete freedom from pestilence, emphasizes by direct contrast the prevalent lack of precautionary concern in private medical practice and the inattention of medical schools regarding it.<sup>7</sup>

An advanced dental curriculum, enforced by the Regents of the State of New York in 1926–1927, is shown in Table I, where, compared with the official medical curriculum for the same year, the extent of the disagreement between typical dental and medical curricula may be directly noted. The most striking general contrasts in Table I are the discordance between the prescribed minimum total numbers of hours (medicine, 3600; dentistry, 4000);<sup>8</sup> the inequality of attention to the medical sciences (51 per cent for medicine, 39.7 per cent for dentistry);<sup>9</sup> the omission of dental pathology, clinical dentistry, and oral surgery from the group of subjects named in the medical curriculum; and the larger proportion of time allotted in the dental curriculum to the special and clinical phases of the instruction (49 per cent for medicine, 57.4 per cent for dentistry). Minor disparities are apparent on almost every line. These particular divergences are expressive

<sup>7</sup> On this subject the Preliminary Report of the Commission on Medical Education may be quoted as follows: "Most of the physicians report little or no health advisory work on presumably well individuals; their advisory functions are almost exclusively in connection with the treatment of actual illness. While there is some increase in this type of work, it is largely undeveloped, although it probably represents one of the largest opportunities for the general practitioner." [Pages 15 and 16.]

<sup>8</sup> The minimum total of 4000 hours has been reduced to 3600 (October, 1927).

<sup>9</sup> In this calculation the reservation for organic chemistry (combined indefinitely with physiological chemistry in the dental curriculum) is included in that for the medical sciences. The allotment for dental anatomy in the dental curriculum contains an unspecified reservation for "operative technic." Therefore the hours in the dental curriculum that are devoted to the medical sciences, including such as special dental anatomy, dental histology, and dental pathology, do not exceed 35 per cent of the total of 4000 hours.

# THE SCHOOL OF DENTISTRY

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TABLE I. COMPARISON OF THE MEDICAL AND DENTAL CURRICULA ENFORCED BY THE REGENTS OF THE STATE OF NEW YORK IN 1926-1927

| SUBJECTS  | MEDICAL CURRICULUM |      | DENTAL CURRICULUM |      |
|---|--------------------|------|-------------------|------|
|   |                    |      |                   |      |
| I. Anatomy . . . . .                            | 648                |      | 570               |      |
| Gross anatomy . . . . .                         | +*                 |      | +                 |      |
| Histology . . . . .                             | +                  |      | +                 |      |
| Embryology . . . . .                            | +                  |      | —                 |      |
| Dental anatomy and histology . . . . .          | —                  |      | +                 |      |
| Physiology and chemistry . . . . .              | 432                |      | 480†              |      |
| Organic chemistry . . . . .                     | —                  |      | +                 |      |
| Physiological chemistry . . . . .               | +                  |      | +                 |      |
| Pathology . . . . .                             | 432                |      | 360               |      |
| Gross pathology . . . . .                       | +                  |      | +                 |      |
| Pathological histology . . . . .                | +                  |      | —                 |      |
| Bacteriology . . . . .                          | +                  |      | +                 |      |
| Dental pathology . . . . .                      | —                  |      | +                 |      |
| Hygiene . . . . .                               | 108                |      | 120               |      |
| Oral prophylaxis . . . . .                      | —                  |      | +                 |      |
| Pharmacology and therapeutics . . . . .         | 216                |      | 60                |      |
| Pharmacology . . . . .                          | +                  |      | —                 |      |
| Materia medica . . . . .                        | —                  |      | +                 |      |
| Total for the division (I) . . . . .            |                    | 1836 |                   | 1590 |
| II. Medicine . . . . .                          | 900                |      | 60                |      |
| Pediatrics . . . . .                            | +                  |      | —                 |      |
| Nervous and mental diseases . . . . .           | +                  |      | —                 |      |
| Dermatology . . . . .                           | +                  |      | —                 |      |
| Syphilis . . . . .                              | +                  |      | —                 |      |
| Medical jurisprudence . . . . .                 | +                  |      | —                 |      |
| Surgery . . . . .                               | 612                |      | 55                |      |
| Orthopedics . . . . .                           | +                  |      | —                 |      |
| Genito-urinary diseases . . . . .               | +                  |      | —                 |      |
| Ophthalmology . . . . .                         | +                  |      | —                 |      |
| Otology . . . . .                               | +                  |      | —                 |      |
| Laryngology . . . . .                           | +                  |      | —                 |      |
| Rhinology . . . . .                             | +                  |      | —                 |      |
| Röntgenology . . . . .                          | +                  |      | +                 |      |
| Obstetrics and gynecology . . . . .             | 252                |      | None              |      |
| Total for the division (II) . . . . .           |                    | 1764 |                   | 115  |
| III. Orthodontia . . . . .                      | None               |      | 105               |      |
| Oral surgery . . . . .                          | None               |      | 120               |      |
| Dentistry . . . . .                             | None               |      | 2070              |      |
| Dental technology . . . . .                     | —                  |      | +                 |      |
| Metallurgy . . . . .                            | —                  |      | +                 |      |
| Prosthetic dentistry . . . . .                  | —                  |      | +                 |      |
| Operative dentistry . . . . .                   | —                  |      | +                 |      |
| Crown and bridge work . . . . .                 | —                  |      | +                 |      |
| Principles of practice . . . . .                | —                  |      | +                 |      |
| Total for the division (III) . . . . .          |                    | None |                   | 2295 |
| Grand total, divisions I, II, and III . . . . . |                    | 3600 |                   | 4000 |

\* The + sign indicates that the corresponding subject was included in the curriculum; the — sign, that it was not. In the medical curriculum the hours for the individual courses were not indicated; in the dental curriculum the number for each was specified.

† The preponderance of allotted hours for physiology and chemistry in the dental curriculum was due solely to the inclusion of organic chemistry in that curriculum, which was based on one year of approved work in an accredited academic college, and its exclusion from the medical curriculum, which was based on two years of work in an academic college.

of the wide general difference between present medical and dental curricula, especially in the depth and breadth of their preprofessional foundations, the degrees of their utilization of mechanical and biological sciences, and the nature and range of their clinical applications.

#### REASONS FOR THE CONTINUANCE OF DENTAL EDUCATION AS A SEPARATE FORM OF PROFESSIONAL TRAINING

By some it is felt that, as dentistry is a means of health service analogous to ophthalmology and other specialties of statutory medical practice, it should be made an accredited medical specialty and its independent status discontinued. This would obviously be desirable if important reasons were not directly arrayed against it, and if dentistry could not otherwise be made the full-service equivalent of an oral specialty of statutory medical practice. Since the dental and the medical laws in every state in this country and in every province of Canada oppose serious obstacles to the conversion of dental practice into an accredited specialty of conventional medicine, these statutes would have to be altered to make it possible. Neither organized medicine nor organized dentistry desires such a conversion or would be content with it. The Section on Stomatology of the American Medical Association, established in 1881 to make the relationship between medicine and dentistry more intimate, was disbanded in May, 1925, chiefly because of lack of medical interest in dentistry. The American Stomatological Association, founded in October, 1924, which aimed to convert dentistry into a specialty of the practice of conventional medicine, now seeks rather to improve their coöperation. The American Stomatological Society, more recently established but having the object of the older stomatological association, does not appear to be receiving any marked encouragement from either dentistry or medicine.

If the dental schools were discontinued and dentistry taught only to medical students, the growing general demand for dental practitioners could not be met by the existing medical schools unless they doubled the size of their student bodies, greatly enlarged their facilities, and completely reorganized their work. Owing to the need for exceptional digital facility in the manifold intra-oral procedures of dental practice and for æsthetic felicity in their execution, the extensive technical training and the clinical instruction and practice peculiar to dentistry cannot be superimposed upon a conventional medical curriculum, leading to the degree of M.D., without making the period of dental training prohibitive in length for most prospective general practitioners. Besides, the medical curriculum is altogether too rigid, and

the views of medical state boards and of medical teachers too unyielding, to permit substitution of training in the essential mechanical and æsthetic aspects of dentistry for anything now contained in the required parts of the undergraduate medical curriculum, although the inclusion of oral subjects among the prospective elective courses to be open to candidates for the M.D. degree would facilitate special instruction in dentistry in medical schools.

Unlike the practice of some specialties of medicine, such as that relating to disorders of the eye by diagnostic and directive medical specialists in ophthalmology (oculists), supplemented by modern optometrists as specialists in refraction and by opticians, the *direct* practice of health service applied to the teeth could not be divided properly among analogous stomatologists (dentists) and dental technicians. Such a distribution is unattainable because dentistry, in all its terminal manifestations, must be practised in the mouth of the patient. The independent dental practitioner must comprehend the import of the variable biological conditions involved and also must possess the skill to perform the requisite intra-oral handwork.

In support of these deductions it may be said that the details in an ophthalmologist's or an optometrist's prescription for a pair of glasses can be obtained and transmitted with exceptional precision. On such a prescription, glasses can be made by machinery, by an optician, with relatively perfect accuracy, under standard and stable conditions, and the glasses can be fitted by an optometrist (or optician) by very simple superficial adjustments that may have considerable range of mechanical and biological variations without detriment to the patient. In dentistry, however, the equivalent of an ophthalmologist's (or an optometrist's) prescription cannot often be "obtained and transmitted with exceptional precision" or filled accurately by machinery. The dental analogue of an optician's glasses must be fitted, as a rule, with microscopic exactness to prevent accession of microorganisms into the substance of the tooth or teeth affected, or to avoid unnatural or undesirable contacts with or stresses upon the teeth and tissues involved or against which the appliance impinges. Anything placed in or on the teeth, however well prepared it may be mechanically, rarely fits perfectly when first tested. It must be directly and often patiently adapted because of the individual peculiarities and the inherent difficulties of the attending variable oral and operative conditions. For this reason an appliance made by a dental technician from a dentist's models or specifications cannot be fitted by the technician or anyone else as superficially as an optometrist (or optician) effectually adjusts a pair of glasses. On the contrary, it must usually be modified and

tested in place in the mouth, until its adaptation is perfect, in accordance with all the complex anatomical, physiological, and æsthetic requirements and the extreme degree of mechanical accuracy involved. Finally, it must be skillfully put into place and adjudged mechanically and biologically sound and artistically satisfactory by the "diagnostic and directive" practitioner of dentistry himself. A dental technician can prepare an appliance from a dentist's models or specifications and, under a dentist's supervision, can adaptively modify it. By attending to various extra-oral procedures a coöperating technician can very effectually and desirably increase the amount of time available to a dentist for direct personal intra-oral service to his patients. But without the education in the medical sciences and their application that the practice of dentistry requires, the most competent dental technician, who with such additional training would be a dentist and not a technician, could not be safely intrusted with the responsibility of fitting dental appliances. At present he could not do so without violating the statutes that regulate the practice of dentistry in this country and in Canada.

From other points of view it may be questioned whether it is desirable to require for all forms of current medical practice the detailed and diffuse information of the present overloaded undergraduate medical curriculum. The development of optometry, for example, plainly expresses a realization, among well-informed laymen particularly, of the lack of proper coördination between the training of the general practitioner of ophthalmology and the service he commonly renders. Dentistry, by grounding its health service on the medical sciences and by aiming to correlate the instruction in these sciences with the obvious needs of the beginner in dental practice, has set an example of very desirable adaptation of means to ends. It can assuredly attain its highest serviceability by continuing along this path of growth. There is nothing of consequence for dental practice in a curriculum for the M. D. degree that cannot suitably be included in the dental curriculum, or which cannot soon be learned by the young dental graduate as he teaches himself and grows in capacity from experience. There is no good reason to assume that anything important that may not be taught to a candidate for the M. D. degree or any other degree cannot or will not be learned by him shortly after his graduation; and very much that may be taught to a prospective physician can be learned by a dentist outside of the medical school. These self-evident truths are often overlooked by those who would mold all types of health-service education into the strait-jacket of the undergraduate medical curriculum.



The matured views of medical faculties in North America that exercise direct control over dental education, where the desire to convert dentistry into a specialty of conventional medical practice might seem to be strongest, is illustrated by recent conditions at the University of Alberta (1925-1926). There the dental school is a department of the medical school, and although the preliminary education of the medical students was further advanced than that of the dental students,<sup>10</sup> both groups received instruction together in the academic subjects common to the first year of each curriculum. In most of the medical sciences, however, the instruction was different for each group of students. In the dental curriculum dental technology was included with medical sciences in the second and third preclinical years. The medical faculty, in its control of the dental school, has not assumed that dentistry can be taught most effectually by superimposing a short curriculum in dental technology and clinical dentistry upon a conventional preclinical curriculum in medicine. On the contrary, the faculty has wisely concluded that, although the instruction in medicine and in dentistry should be closely similar in scope and quality, the teaching should also be adapted to the needs of the respective types of general practitioners. This important difference between the medical and dental curricula for 1925-1926 is illustrated by the accompanying schedules for the second (first professional) years (Table II), where the two curricula show their initial divergence. Of the courses in the second year of the dental curriculum (first professional year) only two were identical with courses in the medical curriculum for the same year, or closely similar to them. One of these is an academic science (organic chemistry); the other is a medical science (histology). The differences between the schedules for succeeding years are cumulative.

A recent experience of the Administrative Board of the Harvard Dental School,<sup>11</sup> in an endeavor to make the practice of dentistry an accredited specialty of conventional medicine, illustrates the inherent

<sup>10</sup> The dental students were admitted to a five-year dental curriculum on the basis of ordinary university matriculation, that is to say, twenty-one courses as offered in three years of high-school work, or the equivalent as determined by the University. The medical students were admitted to a six-year medical curriculum after having passed the university matriculation examinations and completed the first year in the Academic College or the equivalent. The first year in each of these professional curricula was, in effect, a preprofessional year in academic subjects. There have been changes in the Alberta curricula since 1925-1926, and increased requirements for admission, but the present differences are very similar to those in Table II.

<sup>11</sup> Although the Harvard Dental School has been conducted under the control of the Faculty of Medicine, and all its full professors are members of the Faculty of Medicine, the Dental School is not a part of the Medical School, but is a separate unit having the main features of a conventional school of dentistry.

TABLE II. MEDICAL AND DENTAL CURRICULA IN THE SECOND (FIRST PROFESSIONAL) YEAR AT THE UNIVERSITY OF ALBERTA, 1925-1926

| <i>Medicine</i>                              |                  |                                 |                                  |
|--|------------------|---------------------------------|----------------------------------|
| SUBJECT                                      | NUMBER OF COURSE | HOURS PER WEEK (FIRST SEMESTER) | HOURS PER WEEK (SECOND SEMESTER) |
| Gross anatomy (body wall and thorax)         | 4                | 14                              | —                                |
| Gross anatomy (abdomen, pelvis, extremities) | 2, 5             | —                               | 12                               |
| Histology                                    | 10               | 7                               | —                                |
| Organic chemistry                            | 3                | 3                               | 6                                |
| Splanchnology                                | { 12<br>14       | —                               | 10                               |
| Embryology, human                            |                  |                                 |                                  |
| Embryology, general                          | 3                | 5                               | —                                |
| Bacteriology                                 | 1                | 4                               | —                                |
| Materia medica                               | 3                | 1                               | 1                                |
| Total  | 10§              | 34                              | 29                               |

| <i>Dentistry</i>                |                  |                                 |                                  |
|---------------------------------|------------------|---------------------------------|----------------------------------|
| SUBJECTS                        | NUMBER OF COURSE | HOURS PER WEEK (FIRST SEMESTER) | HOURS PER WEEK (SECOND SEMESTER) |
| Gross anatomy (thorax)          | 20               | 4                               | —                                |
| Gross anatomy (abdomen, pelvis) | 22               | —                               | 7                                |
| Histology*                      | 11               | 7                               | —                                |
| Organic chemistry†              | 3                | 3                               | 6                                |
| Physiology‡                     | 41               | 6                               | 6                                |
| Dental anatomy (odontology)     | 6, 8             | 6                               | 4                                |
| Prosthetic dentistry            | 1                | 6                               | 6                                |
| Physical education              | 2                | 1                               | 1                                |
| Total                           | 9§               | 33                              | 30                               |

\* Similar to "Histology 10" for students of medicine.

† Identical with "Organic Chemistry 3" for medical students.

‡ Identical with the course in physiology required of medical students in the third (second professional) year.

§ Total number of different courses during the year.

difficulties in the way of such a transformation. The Board proposed, in effect, that prospective dentists be given an adapted training for the medical degree followed by a graduate training for the dental degree. It was suggested that the first two years of the medical curriculum, a third year in clinical medicine and surgery, and a fourth year in dental technology and clinical dentistry be combined as an acceptable

curriculum for the medical degree, and that a fifth professional year in general dentistry, as a graduate year, be offered for the dental degree. This proposal, which was rejected, encountered some of the serious obstacles mentioned on pp. 126-127. The establishment of combined curricula for the medical or dental degree or both, on plans that would attach more importance to content than to labels, for the purpose of developing exceptional capability in prospective practitioners of the phases that most intimately embrace the joint responsibilities of medical and dental service, deserves the attention of all the universities where the resources for the support of health-service education are abundant, and where the income from fees is not a matter of prime importance.

When dentistry, continuing its separate organization and its own system of training and practice, becomes the full service equivalent of an oral specialty of conventional medicine, neither the patient nor the public will have any interest in the technical question whether dentistry should be formally converted into a specialty of medical practice. But in that day physicians and dentists will easily agree either that the separation of medicine and dentistry into two autonomous professions has been so satisfactory that it should be continued or so undesirable that union should be effected, and the ensuing decision will then be natural and assuredly useful. Meanwhile dentistry in North America cannot profit from any new relationship which, by its forced requirements or artificial character, would increase the difficulties of dental practice without assuring higher quality or greater excellence in the practitioner. Instead, dentistry, on the basis of its present separate organization, requires abundant opportunity, encouragement, and assistance fully to attain its normal stature and capabilities as a division of health service. Present dental leadership is clearly bringing about this very desirable result.

#### CONTRASTS BETWEEN DENTAL EDUCATION IN THE UNITED STATES AND THAT IN FOREIGN COUNTRIES

The main features of dental education in the United States and Canada are so similar that such differences as may be noted are essentially due to local conditions, and are no greater, in general, than those existing between the best schools in any pair of American states. The Canadian universities, like those in the United States, do not regard dentistry as a branch of medical practice and do not require prospective dentists to obtain the M. D. degree as a prerequisite for the dental license. Canadian and American universities in their accord on this

fundamental matter plainly exemplify prevailing professional, social, and economic conditions in the Dominion and in the United States. From the American standpoint the position of the Canadians is highly significant, because, despite their familiarity with the prevailing European system and their freedom to adopt it, they prefer the North American. A Canadian dentist of international repute, summing up, from his extended experience and observations, the "essential differences between the training for the practice of dentistry and the quality of that practice outside of the United States and Canada, generally, on one side, and in North America, on the other," expressed these views (1924-1925):

(1) In Great Britain and Europe, generally, dental education has been under the control of medicine. As a consequence, dental students have been taught the medical subjects in medical colleges. This has resulted in a scientific training better than that given in most of the dental colleges in North America. However, in spite of this fact there have been two disadvantages: (a) the work has not been directed toward the practice of dentistry, nor has it been applied directly to the teeth and surrounding tissues; and (b) dental students have frequently been grouped in the classroom with medical students but have not received the same attention, nor has the same grade of work been required of them. (2) There has been a lack of development on the operative and prosthetic side, which has prevented the average practitioner in Europe from giving as good a service in the replacement of lost tooth tissue compared with the average dentist on this side. (3) In Europe, and particularly in Great Britain, there has more recently been a frank recognition of these conditions, with the result that today the operative and prosthetic side of dentistry is being rapidly developed; and upon the other hand, in North America the teaching of the scientific and medical subjects is being greatly strengthened.

One of the leading American dentists, who is also a physician and has had wide experience in Europe, independently recorded his views on this question as follows (1924-1925):

In the medical sciences many of the foreign universities apparently give better instruction to dental students than they receive on the average in this country, but in the technical branches the training in our schools is far superior to that of European schools, primarily because of the lack of opportunity in foreign schools for clinical experience in the finer technical procedures. The foreign dental student lacks opportunity for broad clinical training largely because of medical control of dental education. They overlook the fact that a dentist's knowledge of the medical sciences can, in the main, be practically applied only in proportion to his technical ability. The dental faculties abroad appear to be so subordinate to the medical that they do not succeed in giving the dental student technical training, either in the laboratory or clinic, comparable to that of the schools in the United States and Canada.

PRESENT CONDITIONS AND TENDENCIES IN DENTAL EDUCATION  
IN THE UNITED STATES AND CANADA

The general trend in dental education may be noted from the data in Table III. During the past forty-five years, under the guidance of national organizations of teachers, examiners, and practitioners, and, since 1909, of the Dental Educational Council of America, the minimum academic requirement for admission to dental schools has been raised from "the possession of the rudiments of an English education," which often meant little more than intelligence enough to arrange for the payment of the entrance fee, to one year of approved work in an accredited academic college; the academic year has been lengthened from five months of uncertain teaching duration to a minimum of thirty-two weeks of six days each; and the curriculum has been increased from one academic year (repeated) to four<sup>12</sup> and its scope greatly extended.

A model curriculum in 1899, and the evolution of the Dental Educational Council's recommendations in this relation (1916-1927), are shown in Tables IV and V respectively. The divisions of the teaching time in these curricula are noted in Table VI.

Although there were numerous changes in details, the curriculum outlined in Table IV served as a general model until 1916. Then, the minimum entrance requirement having been raised to graduation from a four-year high school (effective in 1917), the academic year lengthened to thirty-two weeks (effective in 1909), and the dental curriculum extended to four years (effective in 1917), the Dental Educational Council included among its standards for a Class A rating (effective in 1917-1918), although without allocation to particular years, the subjects and corresponding time allotments indicated in the first column of Table V. In 1918 and 1920 the Council proposed the modifications shown respectively in the second and third columns of Table V. In 1922, having voted to include an entrance requirement of at least one year of approved work in an academic college among its standards for the Class A rating (beginning in 1926-1927), the Council republished the specifications in the third column of Table V, but, until 1927, refrained from suggesting any readjustments with the new conditions for admission. Meanwhile individual schools, particularly those that first based their curricula on one or two years of work in an

<sup>12</sup>To meet the Dental Educational Council's minimum requirements for a Class A rating, a school that exacts two or more years of approved work in an accredited academic college for admission may complete the professional instruction in three academic years (see pages 153 and 155).

TABLE III. SUMMARY OF DATA ON THE EVOLUTION OF SOME GENERAL MINIMUM REQUIREMENTS AS ENFORCED IN A MAJORITY OF THE DENTAL SCHOOLS

| CALENDAR PERIOD | ACADEMIC REQUIREMENTS FOR ADMISSION   | LENGTH OF THE ACADEMIC YEAR |        |       | LENGTH OF THE DENTAL CURRICULUM |                |
|-----------------|---|-----------------------------|--------|-------|---------------------------------|----------------|
|                 |   | Calendar period             | Months | Weeks | Calendar period                 | Academic years |
| 1840-1885       | None . . . . .  | 1840-1885                   | 3-5    |       | 1840-1885                       | 2*             |
| 1885-1897       | "Rudiments of an English education"   | 1885-1896                   | 5      |       | 1885-1891                       | 2†             |
|                 |   |                             |        |       | 1891-1903                       | 3              |
| 1897-1899       | Equivalent to that for admission to a high school ‡   | 1896-1899                   | 6      |       |                                 |                |
| 1899-1902       | Completion of one year of high-school study ‡   | 1899-1904                   | 7      |       |                                 |                |
| 1902-1907       | Completion of two years of high-school study ‡  |                             |        |       | 1903-1904                       | 4              |
| 1907-1910       | Completion of three years of high-school study ‡  | 1904-1909                   |        | 30 §  | 1904-1917                       | 3              |
| 1910-1917       | Graduation from a high school ‡   | 1909-                       |        | 32 §  |                                 |                |
| 1917-1924       | Graduation from a four-year high school (15 college-entrance units) ‡   |                             |        |       | 1917-1925                       | 4              |
| 1924-           | One year of approved work in an accredited academic college; based on graduation from a four-year high school |                             |        |       |                                 |                |
|                 |   |                             |        |       | 1925-                           | 3 or 4 ¶       |

\* Five years of dental practice, before admission, was accepted from 1840 to 1885 as equivalent to one academic year of work in a dental school. The courses of lectures were repeated annually during this period.

† Dental practice before admission was no longer acceptable as an equivalent of any part of the dental curriculum. The two-year curriculum was graded and extended thereafter through two "separate" years, without repetition of lecture courses.

‡ Or "the equivalent," which was often interpreted to mean very much less.

§ Teaching weeks of six days each, exclusive of holidays.

|| In 1922 this standard was announced by the Dental Educational Council as a minimum requirement for its Class A rating, beginning in 1926-1927; in 1924, as a minimum for its Class B rating, beginning in 1926-1927. The standard has been in force in a majority of the schools since 1924-1925.

¶ See the footnote on page 133.

TABLE IV. CURRICULUM APPROVED BY THE NATIONAL ASSOCIATION OF DENTAL FACULTIES IN 1899

(The numerals indicate hours per week)

| FIRST YEAR                            |    | SECOND YEAR            |    | THIRD YEAR             |      |
|---------------------------------------|----|------------------------|----|------------------------|------|
| Anatomy, including dissection . . . . | 2  | Anatomy, comparative   | 1  | Electricity . . . .    | *    |
| Chemistry, inorganic .                | 2  | Anatomy, regional .    | 1  | Ethics . . . . .       | *    |
| Chemistry, laboratory                 | 4  | Bacteriology, didactic | 4  | History . . . . .      | *    |
| Comparative anatomy                   | *  | Chemistry, laboratory  | 4  | Jurisprudence . . .    | 0.5  |
| Dental anatomy . . .                  | 2  | Chemistry, organic .   | 2  | Operative dentistry .  | 2    |
| Histology, didactic                   |    | Materia medica . . .   | 1  | Orthodontia, didactic  | 1    |
| and laboratory . . .                  | 4  | Metallurgy, didactic . | 1  | Orthodontia, practical | 1    |
| Materia medica . . .                  | *  | Metallurgy, laboratory | 2  | Pathology . . . . .    | 1    |
| Physiology . . . . .                  | 2  | Operative dentistry,   |    | Prosthetic dentistry,  |      |
| Prosthetic technics .                 | 10 | didactic . . . . .     | 2  | didactic . . . . .     | 2    |
|                                       |    | Operative technic . .  | 4  | Surgery, general . .   | 1    |
|                                       |    | Orthodontia, didactic  | *  | Surgery, oral . . . .  | 1    |
|                                       |    | Orthodontia, technic   | 1  | Therapeutics . . . .   | 1    |
|                                       |    | Pathology . . . . .    | 2  |                        |      |
|                                       |    | Physiology . . . . .   | 2  | <i>Infirmary</i>       |      |
|                                       |    | Prosthetic dentistry,  |    | Crown and bridge       |      |
|                                       |    | didactic . . . . .     | 2  | work . . . . .         | 4    |
|                                       |    | <i>Infirmary</i>       |    | Operative dentistry    | 15   |
|                                       |    | Crown and bridge       |    | Prosthetic dentistry   | 8    |
|                                       |    | work . . . . .         | 3  |                        |      |
|                                       |    | Prosthetic dentistry   | 5  |                        |      |
| Total . . . . .                       | 26 |                        | 37 |                        | 37.5 |

\* No specification of hours.

academic college, gave the Council's specifications wide variation in scope, year assignments, hour allotments, and sequence; and the Council, wisely regarding the period since 1921 as essentially transitional, has been encouraging experimental deviations.

The Council recently announced (April, 1927) important modifications of its minimum requirements for a Class A or a Class B rating. Hereafter the schools, while properly expected to exact a prescribed minimum entrance requirement and to give suitable instruction in specified sciences and arts, will be free, so far as the Council's rating is concerned, to arrange their professional curricula in accordance with their own judgment, subject only to the Council's determination that in given instances the curricula are adequate for the training that the general practice of dentistry may require. In the judgment of the Council the curriculum need not prescribe more than a total of about 3700 hours. The Council issued to the schools a statement of this belief, and suggested the schedule in the fourth column of Table V as

TABLE V. DENTAL EDUCATIONAL COUNCIL'S SPECIFICATIONS OF SUBJECTS AND HOURS OF STUDY: AMONG THE MINIMUM REQUIREMENTS FOR A CLASS A RATING (1916, 1918, 1920, 1922, 1927)\*

(The numbers below the headings indicate the minimum total number of hours)

|  | 1916 | 1918 | 1920<br>AND<br>1922 | 1927 | REDUCTION<br>IN 1927 |
|--|------|------|---------------------|------|----------------------|
| Anatomy, dental . . . . .  | 96   | 96   | 128                 | 112  | 16                   |
| Anatomy, general . . . . .   | 320  | 320  | 288                 | 240  | 48                   |
| Anesthesia ( <i>see also</i> Physical diagnosis and anesthesia) . . . . .  | —    | —    | 16                  | 16   | —                    |
| Bacteriology . . . . .   | 128  | 128  | 128                 | 128  | —                    |
| Biological chemistry ( <i>see</i> Physiological chemistry)   |      |      |                     |      |                      |
| Biology† ( <i>see also</i> Physics or biology) .   | —    | —    | 96                  | —    | 96                   |
| Chemistry (inorganic, † organic, physiological) and metallurgy . . . . .   | 320  | 320  | 336                 | 240  | 96                   |
| Clinical dentistry ( <i>see</i> Operative dentistry, Clinics)  |      |      |                     |      |                      |
| Clinics: dental pathologic, exodontic, operative, oral surgery, orthodontic, prophylactic, prosthetic, radiologic (including oral medicine and oral diagnosis in 1927) . . . . . | —    | —    | 1424                | 1376 | 48                   |
| Crown and bridge technics ( <i>see</i> Technics)   |      |      |                     |      |                      |
| Drawing ( <i>see</i> Technical drawing)  |      |      |                     |      |                      |
| Dental anatomy ( <i>see</i> Anatomy)   |      |      |                     |      |                      |
| Dental history ( <i>see</i> Jurisprudence)   |      |      |                     |      |                      |
| Dental pathology and dental therapeutics ( <i>see also</i> Clinics) . . . . .  | —    | —    | 96                  | 96   | —                    |
| Dental rhetoric ( <i>see</i> English)  |      |      |                     |      |                      |
| Dental therapeutics ( <i>see</i> Pathology)  |      |      |                     |      |                      |
| Economics ( <i>see</i> Jurisprudence)  |      |      |                     |      |                      |
| Embryology ( <i>see</i> Histology)   |      |      |                     |      |                      |
| English †: dental rhetoric, seminar . .  | 96   | 96   | 96                  | —    | 96                   |
| Ethics ( <i>see</i> Jurisprudence)   |      |      |                     |      |                      |
| Exodontia ( <i>see also</i> Clinics)   | —    | —    | 16                  | 16   | —                    |
| History, dental ( <i>see</i> Jurisprudence)  |      |      |                     |      |                      |
| Histology, including embryology, since 1920 . . . . .  | 128  | 128  | 144                 | 144  | —                    |
| Hygiene, oral (and general, beginning in 1927) . . . . .   | —    | 32   | 32                  | 32   | —                    |
| Jurisprudence, dental history, economics, ethics . . . . .   | 32   | 32   | 32                  | 32   | —                    |
| <i>Carried forward</i> . . . . .   | 1120 | 1152 | 2832                | 2432 | 400                  |

\* The numerals in the headings indicate the years in which the requirements were published by the Council. The specifications in 1927 are advisory only.

† Required for admission, beginning in 1926-1927.



TABLE V (CONTINUED)

|   | 1916 | 1918 | 1920<br>AND<br>1922 | 1927 | REDUCTION<br>IN 1927 |
|---|------|------|---------------------|------|----------------------|
| <i>Brought forward</i> . . . . .  | 1120 | 1152 | 2832                | 2432 | 400                  |
| Materia medica, including pharmacology<br>and general therapeutics, since 1920 .  | 64   | 64   | 64                  | 64   | —                    |
| Medicine ( <i>see</i> Physical diagnosis)   |      |      |                     |      |                      |
| Metallurgy ( <i>see</i> Chemistry)  |      |      |                     |      |                      |
| Operative and clinical dentistry ( <i>see also</i><br>Clinics) . . . . .  | 1300 | 1300 | —                   | —    | —                    |
| Operative dentistry ( <i>see also</i> Clinics and<br>Technics) . . . . .  | —    | —    | 96                  | 96   | —                    |
| Operative technics ( <i>see</i> Technics)   |      |      |                     |      |                      |
| Oral hygiene ( <i>see</i> Hygiene)  |      |      |                     |      |                      |
| Oral surgery ( <i>see</i> Surgery)  |      |      |                     |      |                      |
| Orthodontia ( <i>see also</i> Clinics and Tech-<br>nics) . . . . .  | 96   | 96   | 32                  | 32   | —                    |
| Orthodontic technics ( <i>see</i> Technics)   |      |      |                     |      |                      |
| Pathology, general ( <i>see also</i> Dental pa-<br>thology) . . . . .   | 128  | 128  | 80                  | 80   | —                    |
| Pharmacology ( <i>see</i> Materia medica)   |      |      |                     |      |                      |
| Physical diagnosis and anesthesia ( <i>see</i><br><i>also</i> Physical diagnosis, Anesthesia) .   | 32   | 32   | —                   | —    | —                    |
| Physical diagnosis and principles of med-<br>icine . . . . .  | —    | —    | 16                  | 32   | (+) 16               |
| Physics † ( <i>see also</i> Physics or biology) .   | —    | —    | 48                  | —    | 48                   |
| Physics or biology, or both ( <i>see also</i> Biol-<br>ogy, Physics) . . . . .  | 192  | 192  | —                   | —    | —                    |
| Physiological chemistry ( <i>see</i> Chemistry)   |      |      |                     |      |                      |
| Physiology . . . . .  | 128  | 128  | 144                 | 144  | —                    |
| Prophylaxis ( <i>see</i> Hygiene, Clinics)  |      |      |                     |      |                      |
| Prosthetic dentistry ( <i>see also</i> Clinics,<br>Technics) . . . . .  | —    | —    | 64                  | 64   | —                    |
| Prosthetic technics ( <i>see</i> Technics)  |      |      |                     |      |                      |
| Radiology ( <i>see also</i> Clinics) . . . . .  | 16   | 32   | 16                  | 16   | —                    |
| Seminar ( <i>see</i> English)   |      |      |                     |      |                      |
| Surgery, oral: principles ( <i>see also</i> Clinics)  | 96   | 96   | 32                  | 32   | —                    |
| Surgery: principles . . . . .   | —    | —    | 16                  | 16   | —                    |
| Technical drawing . . . . .   | 48   | 48   | 48                  | —    | 48                   |
| Technics, crown and bridge . . . . .  | 320  | 320  | 224                 | 192  | 32                   |
| Technics, operative . . . . .   | 160  | 160  | 192                 | 160  | 32                   |
| Technics, orthodontic . . . . .   | —    | —    | 48                  | —    | 48                   |
| Technics, prosthetic . . . . .  | 384  | 384  | 448                 | 320  | 128                  |
| Therapeutics ( <i>see</i> Materia medica, Den-<br>tal pathology)  |      |      |                     |      |                      |
| Additions to the above, or other subjects<br>[including laboratory hours (32) for<br>oral surgery, exodontia, anesthesia,<br>and radiology in 1927] . . . . . | 316  | 268  | —                   | 32   | (+) 32               |
| Total . . . . .   | 4400 | 4400 | 4400                | 3712 | (net) 688            |

TABLE VI. COMPARISON OF THE DIVISIONS OF THE TEACHING TIME SPECIFIED IN THE CURRICULA OUTLINED IN TABLES IV AND V

| SUBJECTS             | CURRICULUM APPROVED BY THE NATIONAL ASSOCIATION OF DENTAL FACULTIES IN 1899 |   | CURRICULUM RECOMMENDED BY THE DENTAL EDUCATIONAL COUNCIL IN 1920 AND REAFFIRMED IN 1922* |   | CURRICULUM RECOMMENDED BY THE DENTAL EDUCATIONAL COUNCIL IN 1927†‡ |   |
|----------------------|---|---|--|---|--|---|
|                      | Total Number of Hours (3 Years)   | Percentage of the Total Number of Hours | Total Number of Hours (4 Years)  | Percentage of the Total Number of Hours | Total Number of Hours (3 or 4 Years)                               | Percentage of the Total Number of Hours |
| Academic subjects    | 336   | 11.9                                    | 492  | 11.2                                    | 156  | 4.2                                     |
| Medical sciences .   | 532   | 18.9                                    | 890  | 20.2                                    | 890  | 24.0                                    |
| Dental technology    | 476   | 16.9                                    | 960  | 21.8                                    | 784  | 21.1                                    |
| Clinical medicine .  | 84  | 3.0                                     | 48   | 1.1                                     | 64   | 1.7                                     |
| Clinical dentistry . | 1232  | 43.8                                    | 1808   | 41.1                                    | 1744   | 47.0                                    |
| Miscellaneous . .    | 154   | 5.4                                     | 202  | 4.6                                     | 74   | 2.0                                     |
| Total . . . . .      | 2814  | 99.9                                    | 4400   | 100.0                                   | 3712   | 100.0                                   |

\* Of 336 hours for chemistry, physiological chemistry, and metallurgy, collectively, 252 are allotted here to chemistry, 42 to physiological chemistry, and 42 to metallurgy.

† The allotments to physiological chemistry and metallurgy, in a general total of 240 for "chemistry," are 96 and 48 hours, respectively.

‡ Announced in April, 1927; not applicable before 1927-1928.

one of the many that might be appropriately adopted by any school. The subjects omitted from the schedule, compared with the last previous issue (1922), are inorganic chemistry,<sup>13</sup> physics,<sup>13</sup> biology,<sup>13</sup> comparative dental anatomy, oral surgery clinics, orthodontia technics, English<sup>13</sup> and seminar, and technical drawing. The total apportionment for these subjects was 556 hours.<sup>14</sup> The changes in the reservations of hours are shown in the fifth column of Table V—a net reduction of 688 hours.

The Council also stated that, in the use of this advisory schedule (Table V), "more hours than the number suggested may be justified in a number of the courses, but those responsible for the dental curriculum in a school should make certain that they are not burdening the students with classroom, clinic, or laboratory work so as to make thoroughness and true scientific attainment on their part impossible. . . . The Council disapproves of overloading the curriculum, since

<sup>13</sup> Now required for admission to all acceptable dental schools.

<sup>14</sup> Of a general reservation of 208 hours for inorganic chemistry and metallurgy, 156 have been allotted here to inorganic chemistry.

this often makes thorough and painstaking study on the part of the student impossible because the student has so much of his time occupied in *doing* that he has little time left for contemplation and thought."

For many years the instruction in dental schools consisted almost entirely of lectures, laboratory work in dental mechanics, and infirmary practice. Under these conditions, the cost of equipment and teaching having been very low, the proprietary dental schools reaped their richest financial harvests. By 1900 dental schools in the United States multiplied to their maximum number—57. Most of the dental schools long ignored the need for laboratory work in the medical sciences, chiefly because in proprietary schools the addition of such instruction threatened to consume the profits by greatly increasing the cost of equipment and teaching. When the demand for laboratory work in the academic and medical sciences became strong enough to require formal attention, practical courses were instituted in most of the dental schools, but they were usually conducted superficially and ineffectively. In some instances, however, although the courses were publicly announced as parts of the curriculum, they were not given. At present, because of inadequate equipment and ineffectual teaching, the few remaining independent dental schools, and most of those in universities that are expected or required to be self-supporting, are notably deficient in their attention to the medical sciences. Experience has demonstrated that a dental school in which there is due attention to all the laboratory subjects, adequate instruction in clinical dentistry and in its correlations with clinical medicine, proper remuneration for all the teachers, reasonable activity in research, and commensurate equipment, is like an acceptable medical school in being unable to support itself on the income from fees.

Attention has already been drawn to some of the deficiencies in the instruction in dental technology (p. 119). Notwithstanding the importance of æsthetics in reconstructive dentistry, little attention is given in dental schools to education in taste and beauty that is not incidental to the improvement of digital facility. The only subject in the Dental Educational Council's curricula (Table V) that appears to be directly related to æsthetics is technical drawing. Much of the work in dental anatomy is usually devoted to carving, modeling, and drawing, and to the development of concepts of tooth form. But both of these general subjects are taught quite as much for the purpose of increasing manual skill as for any other, and are thus impressed upon the student. A dentist should obviously possess a technique that is fully adequate for the execution of his purposes, but it is a mistaken

view of the efficacy of dental technology to assume that, for the attainment of success in oral prosthesis as in the mechanical arts, it is sufficient merely to learn the rules and to apply them often enough to gain facility from repetition. This will do for a plumber but not for a modern dentist. In addition to manipulative skill and efficiency in the application of rules, "precepts, formulas, and other devices in conventional procedures to particular ends, the disposition and mental attitude of the practitioner himself are essential elements in an artistic achievement. Imagination and æsthetic idealization are requisite factors beyond the reach of rules and their application; they express the practitioner's love of beauty and the complex play of aspirations, emotions, faculties, instincts, preferences, and reminiscences in his own nature that may be effectually coördinated by apprehension and study of the æsthetic qualities of fine art. Consequently the prospective general practitioner of dentistry should be educated and trained to be not only a dental craftsman, versed in the regulations and competent in the communicable artifices and dexterities of dental technology, but also an oral architect and an oral sculptor, with capacity to exercise an artist's freedom of choice within the scope of the biological limitations imposed upon him. He should be taught to understand that in his prosthetic work unidealized imitation and mere facility in its execution may be inadequate, but that the greatest æsthetic successes can be achieved, and the highest degrees of health service performed, only through felicity in the mechanical and sanitary embodiments of ideals of beauty. He should comprehend that of the two types of attainment, the facile of the artisan or the felicitous of the artist, the latter is the more important, for a practitioner who can idealize and model, design or plan, and æsthetically and biologically evaluate an appliance, need not be his own executant of the extra-oral procedures, but may obtain the help of a technician in the purely mechanical aspects of the work; and where he can devote practically all of his time to intra-oral service for his patients, it would be a waste of his more valuable talent if he did not obtain such assistance for that purpose.

Neglect of æsthetics in dental technology, exaggeration of the value of unidealized imitation and of excessive repetition in digital procedures, disregard for the facts that laboratory artisans do the extra-oral work on appliances for most of the busiest practitioners and that need for such manual assistance is steadily growing, and unwillingness to conduct or to encourage the formal training of technicians are prevailing conditions in the dental schools that lend emphasis to the

suggestion that an inordinate amount of time is now being given in the dental curriculum to apprenticeship training in mechanics.

Dentistry has not yet attained the full equivalence of an oral specialty of medical practice, and medicine has been indifferent to the need for such a development. In the Dental Educational Council's curriculum (Table V), the minimum total allotment of hours for medical sciences is 890. In the best dental schools the reservations of hours for medical sciences are not inadequate, but the use of the allotted time is not so fruitful as it should be. Many dental faculties, paying perfunctory attention to medical sciences, have, in accordance with tradition in the conduct of dental schools, regarded courses in these subjects as chiefly units of "theory," to be passed and their contents applied incidentally. These faculties, glad to be relieved of instruction in such "necessary evils" by turning it over to teachers in the medical laboratories, have seldom been inclined or able to advise suitable adaptations of the courses to dental needs.

The teaching of the medical sciences has long been one of the most difficult phases of dental education. For most of the university dental schools it is now conducted in laboratories in the medical buildings by members of the medical departments. The instruction of dental students in these sciences could be materially improved by better adaptation of the courses to the needs of dentists. In this relation coöperating medical teachers should give due attention to the fact that a prospective general practitioner of dentistry, who may not treat disease outside of the oral domain, must receive extensive special training in various mechanical and æsthetic procedures that are not among the concerns of a physician. Instruction in these important matters cannot be developed satisfactorily by direct and delayed addition to a full curriculum in medicine. Their peculiarities and exactions make it necessary to train the main body of dentists from the beginning as avowed specialists in oral health service. As a rule the attendance at medical schools is large enough to require division of the classes of medical students into sections for their proper laboratory instruction. If it were desired to teach dental and medical students together, the facilities in most of the medical schools would be inadequate, and neither group of students could be given suitable attention without marked diminution in the number of each. Therefore, under the prevailing conditions of attendance, it would be impossible or very inconvenient to unite the medical and dental students for laboratory work in the same classes or sections. This unavoidable physical difficulty harmonizes, however, with the desirability of giving most of the in-

struction in medical sciences to the two groups of students independently, for each group should be guided through their work with the related utilities clearly in view. Association of the two groups of students at lectures, demonstrations, and conferences on general aspects of these sciences, so far as it might be arranged conveniently, would favor attainment of practical equality in the general character of this instruction.

The courses in medical sciences should be adapted to the needs of dental students by suitable reorganization, condensation, coördination, and clinical application, and with due attention to oral phases of each subject. This could be done without any impairment of the intellectual quality, the scientific scope, or the practical value of the instruction as contrasted with that for medical students. These sciences should be taught not only to provide useful medical information but also, and primarily, to develop appreciation and comprehension of medical principles. Dentists, having acquired a medical outlook as undergraduates, could then exercise their diagnostic skill, mechanical ingenuity, and manual dexterity with the medical understanding upon which successful practice of the most important divisions of health service depends. Unfortunately, in many university schools the proposed readjustment and correlation to the needs of the prospective practitioner of dentistry would disturb the serenity of members of medical faculties who control instruction in medical sciences, and who, shirking the duties of teaching and desiring an easy solution of the problem, prefer to repeat mechanically for dental students the corresponding laboratory courses given to medical students. Nevertheless, dental faculties should be prepared to show why adaptations of these courses are needed and how they might be made, and why teachers who would be interested in giving the courses properly to dental students should be carefully selected for the purpose.

An oral or dental appliance or procedure that violates physiological principles or disregards biological conditions, even though it be mechanically and æsthetically perfect, may be tragic in its consequences of distress, disability, or disease. Dentistry cannot attain the full service equivalence of an oral specialty of medicine without close observance of the related principles of medical practice and without adaptability to the corresponding requirements of clinical medicine, among which are clear recognition of all the conditions or disorders that may affect a dentist's procedures or be influenced by them. Dental practice obviously includes the opportunity and obligation to detect *oral* symptoms of abnormalities within the closely related

domains of dermatology, laryngology, ophthalmology, otology, and rhinology, as well as of common pathological states in other parts of the body, and of certain systemic and communicable maladies; to give advisory health service in dietetics, sanitation, and the prevention of diseases; and to consult intelligently and effectually with a physician in a patient's behalf. In view of the obvious importance of this extension of dental practice, one notes with surprise that the Dental Educational Council's curriculum (Table V), which specifies acceptable minima, reserves only 64 hours for basic subjects that correlate clinical dentistry with clinical medicine. The allowances for such important matters as physical diagnosis and principles of medicine, principles of surgery, and anæsthesia, are plainly disproportionate, although a degree of correlation is attained in the teaching of various aspects of clinical dentistry. In the Council's new recommendations the contrast between 64 hours for clinical medicine and 784 hours for elementary dental mechanics is impressive.

Dental service in hospitals and dispensaries has been developing, but as yet is generally deficient. Few dental schools maintain useful relationships with hospitals or dispensaries, and, as a rule, dental students receive very little clinical instruction outside of the dental infirmaries. A closer union between hospitals and dispensaries and dental schools would facilitate expansion of the dental service in the former and would also improve the instruction of the dental students in oral medicine. The need for dental internes in large hospitals is steadily growing more apparent.

The scope, complexity, and difficulties that arise from the concurrent mechanical, æsthetic, and medical demands upon dentistry make it impossible for anyone to practise expertly all aspects of it, and as a consequence several important specialties have arisen. Oral surgery and orthodontia have acquired the status of accredited dental specialties, but oral diagnosis, periodontia, and prosthodontia are among the phases that now seem to be attaining concreteness and gaining an increasing number of whole-time representatives. The schools of dentistry, like those of medicine, have not yet attempted seriously the task of training specialists in practice, teaching, or research, and with a few exceptions provide only undergraduate curricula (Table VII). The first graduate courses in dentistry were offered at Michigan in 1894, where for nearly twenty-five years the graduate degree was D.D.Sc., but since 1918 has been M.S. Similar opportunities, though for the M.S. degree alone, have been offered by Minnesota since 1915-1916, Illinois since 1921-1922, Northwestern since 1922-1923, Marquette since

1924-1925, and California since 1925-1926.<sup>15</sup> The total attendance of graduate students in dentistry at these five universities during the four academic years 1921-1925 was successively 2, 8, 18, and 26, with the corresponding averages of 1, 2, 4, and 5, or one in 444, 216, 135, and 129, respectively, of the total number of graduates from all the dental schools in the United States during the next preceding years. The maximum annual attendance of graduate students during 1922-1925 was registered at Northwestern—4, 9, and 14 respectively. Northwestern, with 32 dental graduate students in 1927-1928, more than one third of the total number, continues to be the chief influence for progress in this important field. As yet none of the candidates have received the Ph.D. degree. The medical schools of Yale University and the University of Rochester, aided by grants from the Rockefeller Foundation, now offer (1929-1930) fellowships to dentists, to promote coördinated research and graduate work in medical sciences, clinical medicine, and clinical dentistry, and to encourage special attention to the phases of health service that embrace the joint responsibilities of medical and dental practice. Curricula for the education of dental hygienists, advanced courses for the further training of general practitioners, courses for dental assistants and technicians, dental extension teaching, or all of these, were conducted during 1925-1926 by the schools named in Table VII.

In the United States in 1924-1925 the estimated value of the land and buildings used primarily for dental education by the forty-three schools, exclusive of the value of rented property or of buildings chiefly occupied by medical schools, was \$6,105,137, an average of \$141,980 for each school. The equipment was valued at \$3,042,371, an average of \$70,753. There was a total debt of \$1,707,807, an average of \$39,716. The total net value of the property was \$7,439,701, an average of \$173,016. The total floor area devoted to dental instruction averaged 34,910 square feet, which is closely equivalent to that of eleven rooms 30 feet by 100 feet in size. New buildings for six of the schools, and improved equipment in most of them, have materially increased these values since 1924-1925.

In Canada in 1924-1925 the estimated value of the land and buildings used primarily for dental education by the five schools was about \$775,000, an average of \$155,000. The equipment was valued at \$267,635, an average of \$53,527. There was a total debt of \$136,223, an average of \$27,245. The total net value of the property was

<sup>15</sup> Columbia, Harvard, Iowa, Loyola (Chicago), Ohio State, Pittsburgh, and Southern California also offer graduate courses for dentists, leading to higher degrees (1929-1930).



TABLE VII. DENTAL SCHOOLS IN THE UNITED STATES IN WHICH GRADUATE WORK AND SPECIAL COURSES WERE CONDUCTED IN 1925-1926

| SCHOOL                       | GRADUATE COURSES | CURRICULUM FOR DENTAL HYGIENISTS | COURSES FOR DENTAL PRACTITIONERS | COURSES FOR DENTAL ASSISTANTS OR TECHNICIANS | DENTAL EXTENSION TEACHING |
|------------------------------|------------------|----------------------------------|----------------------------------|--|---------------------------|
| California . . .             | +                | +                                | -                                | -  | +                         |
| Columbia . . .               | -                | +                                | -                                | -  | -                         |
| Harvard . . .                | -                | -                                | +                                | -  | -                         |
| Illinois . . .               | +                | -                                | +                                | -  | +                         |
| Iowa . . .                   | -                | -                                | +                                | -  | +                         |
| Loyola (Chicago)             | -                | -                                | +                                | -  | -                         |
| Marquette . . .              | +                | +                                | +                                | -  | +                         |
| Michigan . . .               | +                | +                                | -                                | -  | -                         |
| Minnesota . . .              | +                | +                                | +                                | -  | +                         |
| New York . . .               | -                | -                                | +                                | -  | -                         |
| North Pacific . .            | -                | -                                | -                                | +  | -                         |
| Northwestern . .             | +                | +                                | +                                | +  | +                         |
| Pennsylvania . .             | -                | +                                | +                                | -  | -                         |
| Pittsburgh . . .             | -                | -                                | +                                | +  | -                         |
| Rochester (Dispensary) . . . | -                | +                                | -                                | -  | -                         |
| Temple . . .                 | -                | +                                | -                                | -  | -                         |
| Tennessee . . .              | -                | +                                | -                                | -  | -                         |
| Tufts (Forsyth) .            | -                | +                                | +                                | -  | -                         |
| Virginia . . .               | -                | -                                | -                                | -  | +                         |
| Washington . .               | -                | -                                | +                                | -  | -                         |
| Total (+) . .                | 6                | 11                               | 12                               | 3  | 7                         |

\$906,412, an average of \$181,282. The total floor area devoted mainly to dental instruction averaged 18,688 square feet, which is closely equivalent to that of six rooms 30 feet by 100 feet in size.

In the United States and Canada a majority of the schools are well equipped for the work in dental technology and in clinical dentistry. During 1928-1929 in the university schools all or nearly all the courses in the medical sciences were taught with the coöperation of medical faculties, and, as a rule, in laboratories where medical students received similar instruction. Few of the schools have adequate facilities for the study of the correlations between clinical medicine and clinical dentistry, although a few maintain useful clinical relationships with hospitals and dispensaries. In most of the schools the libraries are notably inadequate. The Carnegie Corporation has appropriated \$50,000 for allotment in 1929-1930 to twenty dental schools in the United States and Canada for the improvement of their libraries.

The equipment commonly used by dental students in their technical

and clinical work is very similar to that in the office and laboratory of a dental practitioner. Although as a rule all the massive articles that may be employed in common are supplied by the school, the student is required to purchase most of the things he needs, which, as his personal property, may be useful in his future practice. Inasmuch as the units in this private outfit are numerous and valuable, and their utility is easily impaired, the selection, care, replacement, and cost of these instruments and materials are matters of particular concern to the student. Much of this minor equipment is often sold to the student under conditions that are directly imposed by the school, and in some cases appears to be excessive. Several schools act as direct intermediaries in the sale of equipment to students or encourage the students to conduct a coöperative plan, in order to insure the use of approved articles at reasonable rates. Representatives of some schools, considering this function a commercial opportunity, either sell goods to students at prices intended to afford a "good profit," or, to that end, openly or privately effect personal arrangements with supply houses. A number of the schools, some of them integral parts of universities, including state universities, reserve rooms in their buildings for retail stores conducted independently by one or more supply houses for the direct sale of dental merchandise to students. This is done "for the convenience of all concerned," but because the salesmen are not always men of high personal character, and their example and influence are not in harmony with the ideals of a profession, some of these stores breed personal selfishness and commercial overreaching among the students. Thus, in institutions where a true professional spirit should be inculcated above everything else, the outlook of both teachers and students is beclouded by mercenary influences. The location of such independent stores in the buildings of dental schools is unnecessary, undignified, and unprofessional. Instead of requiring venders of dental merchandise to sell their wares in the market place, these dental schools welcome the supply house as a closely coöperative agency. At home and at ease as an important and accredited part of the local educational system, it is given, by such frankly intimate association, a degree of public standing and participation that appears to carry with it, for the house and for "business in dentistry," an avowedly professional benediction. Under such circumstances purposes of material acquisition, which utilitarian education unavoidably nourishes in the student, are overstimulated by the insignia of associated commercialism, when such aims should be persuasively and consistently repressed by refining restraints that minimize selfishness and encourage professional aspiration.

Additional significant data, the most comprehensive available on financial conditions, attendance, teaching, research, clinical service, graduates, etc., for the United States and Canadian schools, are directly contrasted in Tables VIII and IX (pp. 148-151).

Generous financial support of the best dental schools, for the promotion of the public welfare through individual and community health service, is an important social necessity. That the universities have failed almost completely to impress upon the public the urgency of this need is shown by the data in Table X (p. 152), which presents the names of the six dental schools in North America having current income from endowments during 1920-1925, the amounts of such income, and related information. In 1924-1925 the average amount of current income from endowment for the six schools named in the table was \$8734; for the forty-three schools in the United States it was \$1219.<sup>16</sup> Conditions have not been greatly improved in these respects since 1925. Dental education needs and deserves specific endowments for its support. Obviously, it will be unable to attain its normal development until it enjoys a full share of the many advantages that now accrue to the students, teachers, investigators, and practitioners of other types of scientific health service. Without a relatively large income in excess of fees, salaries for instruction cannot be made sufficient to attract able men to the career of teaching in dentistry, constructive experimentation in dental education will be sporadic and superficial, and in most schools the instruction will remain perfunctory and uninspiring. Deprived of financial support analogous to that given to medical education, research will continue to languish, libraries cannot be materially strengthened, equipment will not be improved, methods will lack scientific scrutiny, desirable development of instruction for both medical and dental students in the correlations between clinical medicine and clinical dentistry will be impossible, and coöperation between medicine and dentistry will not acquire the cordiality and sufficiency that should characterize it. The recent gifts by Mr. George Eastman, the General Education Board, and the Rockefeller Foundation to the University of Rochester, and of Mrs. Montgomery Ward to Northwestern University, amounting in each instance to millions for the promotion of education, research, and service in medicine and dentistry coördinately, signify a high appreciation of the public importance of dental education, and seem to hold out the promise of adequate financial support for the university schools of dentistry.

<sup>16</sup> Some of the dental schools in state universities, which receive allotments of annual legislative appropriations, have the equivalent of current income from endowment.

TABLE VIII. DENTAL SCHOOLS IN THE UNITED STATES. (SEE TABLE IX.)

|   | 1920-1925   |             |             |             |             |             |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
|   | 1920-1921   |             | 1921-1922   |             | 1922-1923   |             |
|   | 46          | 46          | 46          | 46          | 46          | 46          |
| Number of schools . . . . .   | 46          | 46          | 46          | 43          | 43          | 44.8        |
| Current income . . . . .  | \$4,285,528 | \$4,971,140 | \$5,618,420 | \$5,781,931 | \$5,828,543 | \$5,297,112 |
| Current expenditures . . . . .  | 4,144,418   | 4,761,729   | 5,330,951   | 5,460,410   | 5,558,472   | 5,051,196   |
| Surplus . . . . .   | \$141,110   | \$209,411   | \$287,469   | \$321,521   | \$270,071   | \$245,916   |
| Deficit . . . . .   | —           | —           | —           | —           | —           | —           |
| Paid by universities in excess of dental income, and included above . . . . . | \$787,925   | \$930,887   | \$908,636   | \$953,237   | \$1,185,027 | \$953,142   |
| Direct appropriation . . . . .  | 195,512     | 254,976     | 294,266     | 350,078     | 512,016     | 1,606,848   |
| Indirect — estimated (net)† . . . . .   | 592,413     | 675,911     | 614,370     | 603,159     | 673,011     | 631,773     |
| Net deficit . . . . .   | 646,815     | 721,476     | 621,167     | 631,716     | 914,956     | 707,226     |
| Income from endowment . . . . .   | 41,520      | 49,678      | 50,271      | 55,347      | 52,401      | 49,843      |
| Library expenses . . . . .  | 13,082      | 15,843      | 19,891      | 22,912      | 25,343      | 19,414      |
| Research expenses . . . . .   | 14,347      | 16,432      | 22,164      | 36,795      | 41,370      | 26,222      |
| Payments on account of debt . . . . .   | 201,895     | 194,410     | 207,421     | 232,522     | 183,815     | 204,013     |
| Principal . . . . .   | 128,721     | 102,215     | 114,015     | 150,104     | 93,766      | 588,821     |
| Interest . . . . .  | 73,174      | 92,195      | 93,406      | 82,418      | 90,049      | 86,248      |
| Salaries . . . . .  | 2,246,812   | 2,497,231   | 2,756,546   | 3,026,809   | 3,139,970   | 13,667,368  |
| Administration . . . . .  | 331,312     | 357,859     | 394,050     | 407,056     | 405,910     | 379,237     |
| Instruction . . . . .   | 1,915,500   | 2,139,372   | 2,362,496   | 2,619,753   | 2,734,060   | 2,733,474   |
| Subjects:   |             |             |             |             |             |             |
| Academic or medico-dental . . . . .   | 800,415     | 833,767     | 868,207     | 929,240     | 980,462     | 882,418     |
| Dental . . . . .  | 1,115,085   | 1,305,605   | 1,494,289   | 1,690,513   | 1,753,598   | 1,471,818   |
| Per teacher: dental subjects . . . . .  | 891         | 931         | 986         | 1,061       | 1,145       | 1,009       |
| Fees (income) . . . . .   | 3,305,176   | 3,774,619   | 4,431,898   | 4,560,316   | 4,396,996   | 4,093,801   |
| Students . . . . .  | 2,392,437   | 2,664,796   | 2,928,685   | 2,937,660   | 2,858,602   | 2,756,436   |
| Patients . . . . .  | 912,739     | 1,109,823   | 1,503,213   | 1,622,656   | 1,538,394   | 1,337,365   |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
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| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
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| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |
| Average per Year  | —           | —           | —           | —           | —           | —           |
| Total   | 224         | 224         | 224         | 224         | 224         | 224         |
| Per School  | —           | —           | —           | —           | —           | —           |







TABLE X. AMOUNTS OF CURRENT INCOME FROM ENDOWMENT AVAILABLE TO DENTAL SCHOOLS IN THE UNITED STATES: 1920-1925<sup>17</sup>

| SCHOOL  | CURRENT INCOME FROM ENDOWMENT |           |           |           |           |
|---|-------------------------------|-----------|-----------|-----------|-----------|
|   | 1920-1921                     | 1921-1922 | 1922-1923 | 1923-1924 | 1924-1925 |
| California . . . . .  | None                          | None      | None      | \$549     | \$589     |
| Columbia . . . . .  | \$6,000                       | \$6,000   | \$6,000   | 6,550     | 6,550     |
| Harvard . . . . .   | 10,420                        | 8,528     | 9,255     | 9,218     | 9,500     |
| Northwestern . . . . .  | None                          | None      | 66        | 66        | 610       |
| Pennsylvania . . . . .  | 25,000                        | 35,000    | 34,800    | 38,664    | 37,443    |
| Pittsburgh . . . . .  | 100                           | 150       | 150       | 300       | 200       |
| Total . . . . .   | \$41,520                      | \$49,678  | \$50,271  | \$55,347  | \$54,892  |
| Number of schools having current income from endowment                  | 4                             | 4         | 5         | 6         | 6         |
| Number of schools having no current income from endowment <sup>17</sup> | 42                            | 42        | 41        | 37        | 37        |
| Total number of dental schools  | 46                            | 46        | 46        | 43        | 43        |

The Dental Educational Council's classification of the dental schools in the United States, as of July 1, 1929, are these:

*Class A:* Atlanta, Baylor, Buffalo, California, Creighton, Harvard, Illinois, Indiana, Iowa, Kansas City, Louisville, Loyola (Chicago), Loyola (New Orleans), Marquette, Michigan, Minnesota, New York, North Pacific, Northwestern, Ohio State, Pennsylvania, Pittsburgh, St. Louis, San Francisco ("P and S"), Southern California, Tennessee, Tufts, Virginia, Washington, Western Reserve.

*Class B:* Columbia, Georgetown, Howard, Maryland, Meharry, Nebraska, Temple.

*Unclassified:* Texas.

### DESIRABLE IMPROVEMENTS

Further orderly progress in dental education requires general advance along at least four main avenues.

1. In universities dentistry, as an important division of health service and the equivalent of an oral specialty of medical practice, should receive the quality of consideration and support now deservedly accorded to conventional medicine.

2. In dental schools, teaching and research should be as effectual as the best in a good university, and the status of dental teachers should be raised accordingly.

<sup>17</sup> Several endowment funds now in process of development from profits are not indicated here because they have not yet been productive of current income.



3. The preparatory education of dentists should be equivalent, in general character, to that of physicians, which now includes at least two years of approved work in an accredited academic college after graduation from a four-year high school.

4. The professional curriculum should be reorganized to provide an intensive and well-integrated undergraduate training for general practitioners and an optional graduate training for specialists.

Of these improvements the first and second await not only the development, in universities, of a realization of the importance of dentistry as health service but also the establishment of endowment funds for the maintenance of dental schools and for the support of dental research. The third and fourth are also contingent upon better financial support of dental schools, but, in addition, they require important changes in traditional views regarding the programs of medical education and dental education.

Dentistry, in the quality and efficiency of its health service for the patient, could be made the full equivalent of an oral specialty of medical practice, including the highest attainable usefulness in mechanical and artistic reparative measures, without requiring the dental student to "take" the redundancies of a curriculum for the M.D. degree, by pursuit of the following three main objectives: (1) the preliminary education and the instruction in the fundamental sciences should be practically the same in general character and adaptability as for the medical student, after the proposed improvement of the medical curriculum (p. 122); (2) the training peculiar to dentistry should be sufficient to assure both ability to initiate safely a dependable modern general practice of dentistry and capacity to grow in proficiency; and (3) the most advanced phases of dental practice should be reserved for systematic optional graduate study by prospective specialists.

These objectives could be attained through the requirement of (1) at least two years of preparatory work in an academic college, including extra instruction in oral hygiene, mechanics, and fine art that would stimulate interest and develop ability in the prospective practice of dentistry or reveal ineptitude; (2) and three years of intensive and well-integrated effort in an undergraduate dental curriculum for the training of general practitioners only, the years to be lengthened by beginning them with summer sessions, wherever the present hour-content of four conventional academic years is regarded as essential or current excesses cannot be discontinued;<sup>18</sup> followed by (3) optional supplementary full-year graduate curricula for all types of specialists.

<sup>18</sup> See the footnote on page 133.

On this program ("two-three-graduate plan"), which is now in operation at seven of the leading dental schools, general practitioners could be trained in five years after graduation from high school. This elastic plan, which might serve equally well for medicine,<sup>19</sup> would afford a briefer, better coördinated, and perhaps a common procedure for instruction in the most important aspects of health service, as well as a foundation for more effective training of practitioners in its various divisions and specialties. At present, in dentistry as in medicine, there is no provision for the formal training of specialists, who, after being licensed as general practitioners, are usually self-taught or acquire experience in association with specialists, but often are merely self-proclaimed.

Dean Davison of the Medical School of Duke University, in a recent discussion of the proposed award at Duke of the "M.D. degree five years after high school," wrote in part as follows :

The present standards of physicians can be maintained and in fact probably improved if preference in admission is given to carefully selected younger students who have intelligence and character plus two years of college work, and if the M.D. degree is given after the completion of three medical school years of forty-four weeks each. The rigid selection of students is the essential factor in the success of this experiment.

The proposed improvements do not disregard any of the economic and social factors involved. They do not contemplate the education of general dental practitioners at such a level, whether of training or of the cost of education, as will make the dentist inaccessible to the man of small means. On the contrary, they aim to secure such a quality of general education and of professional training as is absolutely essential to the safeguarding of public health.

The dental schools in North America now require at least one year of work in an academic college for admission to a four-year professional curriculum, or the equivalent in time—a total of at least five ordinary academic years after graduation from high school. Concentration of the professional training into three years instead of the conventional four, without the loss of any educational value, would enable the general practitioner to begin his career of service a year earlier. In schools having lengthened years (summer "quarters"),

<sup>19</sup> At the annual meeting of the American Medical Association, in May, 1927, the House of Delegates, acting on the report of a special committee, endorsed the committee's conclusion that the present medical curriculum must be reduced materially, and that any consideration of a new curriculum should give special attention to the training of general practitioners, with brief courses in the more important specialties.

the capital invested in the dental plant would be used more advantageously, long interruptions in the digital training of the student would be avoided, and loan funds could be employed to aid the comparatively small number of students who might be unable, for financial reasons, to proceed on the more intensive plan. A lengthened year might seem to interfere with the vacations of the teachers; but summer sessions would not require the attendance of the entire faculty, and teachers serving throughout a summer session might prefer to have their regular vacations during the winter.

The most important objection to the proposed reorganization is the likelihood that, by reduction in the number of undergraduate classes from four to three, the annual income from tuition fees in a given school would be seriously diminished. Independent dental schools would doubtless find this obstacle insurmountable, but there are now only three such schools, and these will soon become integral parts of universities or be discontinued. In the universities having dental schools the equivalent of the missing fourth-year dental classes would probably be resident in the academic colleges, paying tuition fees there, and graduate students in dentistry — a direct addition — would also pay the corresponding fees. Universities alive to their responsibility in dental education will seek endowment funds for the proper maintenance of the dental schools. It is reasonable to assume that when the public learns the nature and extent of the financial needs of dental schools for the furtherance of teaching, for the improvement of practice, and for the advancement of research in the field of oral health service, the necessary gifts will be forthcoming. Without adequate endowments, or the equivalent in current income, the universities will be obliged to continue a program intended in many cases primarily to keep the dental schools alive, and to prolong the residence of students for that purpose, rather than to give the students what a modern dental school with proper public support should offer on a plan of economic, intensive, and integrated endeavor. Recent benefactions, notably by Mr. and Mrs. Murry Guggenheim of New York, Mr. Julius Rosenwald of Chicago, Senator James Couzens of Michigan, and Col. Joseph Samuels of Providence, for the extension of preventive and corrective dental service for children, not only show growing public appreciation of dentistry as a means to prevent, cure, or ameliorate sickness and disability, and to preserve health, but also seem to hold out the promise of adequate endowments for the university schools that train practitioners of dentistry.

Table XI indicates the recent development of sentiment regarding the practical value of current programs.

TABLE XI. CLASSIFICATION OF THE UNITED STATES DENTAL SCHOOLS  
ACCORDING TO CURRICULA

Minimum Academic Requirement for Admission to First Dental Year

| YEAR                 | PLANS* |       |     |   |                                      |     |     | NUMBER OF SCHOOLS |   |
|----------------------|--------|-------|-----|---|--------------------------------------|-----|-----|-------------------|---|
|                      | 0-4    | 1-4 † | 0-5 | 2-3-graduate (Professional Curriculum in Three Years) |                                      | 2-4 | 3-4 | Total             | Require at Least Two Academic College Years for Admission |
|                      |        |       |     | Conventional Length                                   | Including Summer Session ("Quarter") |     |     |                   |   |
| 1925-1926            | 15     | 25    | 0   | 1   | 0                                    | 2   | 1 ‡ | 44                | 4   |
| 1926-1927            | 2      | 25    | 6   | 2   | 0                                    | 4   | 1 ‡ | 40 §              | 7   |
| 1927-1928            | 1      | 23    | 3   | 4   | 0                                    | 8   | 1 ‡ | 40 §              | 13  |
| 1928-1929            | 0      | 25    | 0   | 5   | 0                                    | 9   | 1 ‡ | 40 §              | 15  |
| 1929-1930            | 0      | 23    | 0   | 5   | 2                                    | 8   | 0   | 38                | 15  |
| Present group totals | 23     |       |     | 7   |                                      | 8   |     | 38                | 15  |

\* The first of the two numbers in each heading indicates years of work in an academic college; the second, years in the undergraduate professional curriculum.

† Practically all the 1-4 schools admit qualified students to advanced standing on a 2-3 plan.

‡ Rochester: opened in 1925; has had no dental students; in dentistry now offers graduate work only (beginning in 1929-1930).

§ Ohio (Cincinnati) and Vanderbilt — 1-4 schools — were discontinued in 1926. Since 1926 no new students have been admitted to Tulane and Cincinnati (proprietary), both 1-4 schools. They were discontinued in 1928 and 1929, respectively. These four schools are not included in this total.

|| Beginning in 1929-1930, Rochester (3-4) becomes a graduate school in matters relating to dentistry, and Denver (1-4), about to discontinue, will not admit new students. These schools are not included in this total.

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<sup>20</sup> In 1923 this organization was amalgamated into the American Association of Dental Schools.

## CHAPTER VI

### THE SCHOOL OF EDUCATION

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The University of Chicago

#### EUROPEAN INSTITUTIONS FOR THE TRAINING OF TEACHERS

In order to arrive at a clear understanding of the character and functions of departments of education and schools of education in the colleges and universities of the United States, one must have some knowledge of the European institutions which set the pattern for the methods adopted on the American continent for the training of teachers. The two facts with regard to European education which must be kept in mind are, first, that there are two school systems in all European countries, one for the common people and one for the upper classes.<sup>1</sup> The two school systems were originally and are now for the most part distinct in government, in curriculums, and in provisions for the training of teachers. The schools for the common people are relatively meager and have little or no relations with the universities. The schools for the upper classes are the favored schools, and it is through these and through these alone that access to the university is possible. Evidently provision must be made outside of the universities for the training of teachers for the lower schools. This is what we find to be true. The universities contribute to the preparation of teachers for the schools attended by the upper classes, but little or not at all to the training of teachers in the common schools.

The second fact which must be understood is that teaching is a civic function clearly recognized in all European countries as a type of service which is under the direct control and guidance of the central government. The procedures in all schools are prescribed with reference both to the selection of materials of instruction and to the determination of methods of teaching. It follows, therefore, that the government recognizes the special training of teachers as an important phase of its general policy of the control of the schools.

<sup>1</sup> The reorganizations which have been initiated since the war have changed conditions somewhat; recent history is, of course, not relevant to this discussion.

## THE EUROPEAN EXAMPLE AND AMERICAN PRACTICE

The evolution of education in Europe had gone far toward the complete establishment of a policy in both these respects before the beginning of the national period on the American continent. When the schools of the United States began to take definite form there was naturally a strong tendency to copy the established practices of Europe. On the other hand, there was no central governmental control of the schools provided for in the constitution of the United States. Local control has always been the accepted policy of school government here. The result of this departure from Old World policy is a mixture of purely American characteristics in the teacher-training institutions of the United States and of borrowed characteristics and forms of organization which must be understood as derived from European examples.

The local control of American schools has made for a certain degree of laxness in policy. There are communities in the United States today which are satisfied to employ as teachers persons with very little general education and without any professional training. On the other hand, there are some of the most elaborately equipped and ambitious teacher-training institutions in the world maintained in the United States as expressions of the determination on the part of some American communities to provide the fullest possible professional training for those who are to conduct schools.

Whether the training of teachers is meager or elaborate, the institutional pattern which was early adopted by the United States for providing such training came directly from Europe and is still evident in American teacher-training schools. The first teacher-training institutions in America were the results of an agitation which began during the second decade of the nineteenth century. Since the common schools presented the more urgent problems of that period, the first discussions related exclusively to the training of teachers for the common schools. In the United States, as in Europe, the universities (or colleges, as they were at that time) did not regard themselves as involved. The common school was an institution far removed in interests and in constituency from the college, and the problem of training teachers to give instruction in the common branches was something that the college never attempted to solve. We find, therefore, that beginning in 1823 there grew up in New England and afterwards in the other northern Atlantic states institutions modeled on the European training schools for teachers of the common schools. These special teacher-training institutions were known by a name borrowed

from France. They were called normal schools. Their internal organization was largely influenced by the practices in the Prussian teachers' seminaries.

### EARLY AMERICAN NORMAL SCHOOLS

The first normal school on this continent was a private institution opened in 1823 at Concord, Vermont, by the Reverend Samuel R. Hall. The first state normal institution was opened in 1839 at Lexington, Massachusetts, after a vigorous discussion by public-minded citizens of the virtues of the Prussian teachers' seminaries.

The first normal schools not only were detached from the colleges but were emphatically of the grade which is described by the present-day term "secondary"; that is, they received students who were below the level of preparation required by the colleges. In New York State and in Pennsylvania the secondary-school level of normal training is even clearer than in the New England institutions, for in these northern Atlantic states academies were in some cases subsidized by the state to take over the function of teacher-training.

Not only was the admission to normal schools on the relatively low level described, but the subject matter taught in these schools was in sharp contrast with the courses conducted in colleges. The latter institutions taught foreign languages, advanced mathematics, and cognate subjects, while the normal schools taught rudimentary subjects and methods of presenting these rudimentary subjects to children.

For several generations after the normal schools of this country had been launched as secondary in grade and quite distinct from the colleges, there was no recognition of the need for special training of teachers of higher institutions. Indeed, it may be said that at the present time there is a strong disposition in many quarters to believe that the only training needed by a high-school teacher or college teacher is training in subject matter. Anyone who knows geometry is assumed to be able to teach that subject. The professional training of teachers of higher institutions is therefore to be described as only very partly organized even at the present time.

### EDUCATION A RECENT AND OFTEN UNWELCOME ADDITION TO THE COLLEGE CURRICULUM

The foregoing historical sketch ought to make perfectly clear to the reader the reasons why education is a relatively late comer among the subjects taught in colleges and universities. Education as a pro-

fessional subject belonged for many years exclusively to the normal schools, and it was a secondary subject as taught in those institutions. There was also a highly formal and prescriptive flavor to much of the pedagogical instruction given in the normal schools. The young candidates for admission to the teaching profession were told exactly what to do in teaching. Methods of teaching were so formal that they aroused the criticism of many college and university instructors who were liberal and scientific in their attitudes. The traditions of formalism are so strong that many critics of the science of education as it is taught today believe that they must assail all teacher training courses, modern as well as ancient, on the ground that they destroy initiative.

It may be said that the break between teacher-training and the older colleges and universities along the Atlantic seaboard was complete and almost irremediable. Here and there, in Eastern colleges, experiments in instruction in education were tried. As early as 1832 lectures on pedagogy were offered for a time in New York University. From 1850 to 1855 the superintendent of schools of Providence, Rhode Island, gave courses to seniors in Brown University on what was known as didactics. These examples of college treatment of educational subjects stand out, however, as relatively isolated examples. The success which they achieved seems to have been slight. Even today there is in general a distinct line of separation between the Eastern normal schools and the colleges and universities of that territory. Certain institutions, to which reference will be made later, have been evolved in Eastern universities which are related to the teacher-training institutions of the country, but in the main the tradition of separation holds.

#### NEW POLICY OF STATE UNIVERSITIES

It remained for the state universities of the north-central states to effect a change in the whole situation. When the University of Michigan was organized, in 1837, its founders conceived of it as the head and crown of the state system of education. In theory the university was to perform numerous functions of supervision of the whole educational system of the state. Such a conception as this included the lower schools and the high schools as under the influence of the university. Indeed, the university was to establish branches in various parts of the state. Among the branches was one at the neighboring town of Ypsilanti. The ambitious plans for the university could not be carried out in full because of lack of financial support, and the



branches were soon separated from the university, most of them becoming union high schools. The institution at Ypsilanti became a teacher-training institution and is today one of the leading normal schools of the country; like other institutions of its type it is entirely separate from the university.

The break between the university and the public-school system of the state never became complete in Michigan, in spite of the difficulties which prevented the complete realization of the hopes of the founders of the university. Two facts may be cited to illustrate the contrast between the situation in Michigan and that which prevails in the older states. Three decades after its founding, the University of Michigan established the system of admission of students from the high schools of the state on certificate instead of by examination. Ten years earlier, in 1860, the university provided a course on "the philosophy of education, school economy, and the teaching art."

The University of Michigan did not at a single stroke bring education into the university on an equal footing with the older academic subjects, and it did not escape controversies with the normal schools, which became competitors before the state legislature for recognition and appropriations. Nevertheless the Michigan attitude was a new and more wholesome attitude toward the problem of providing education for all classes of people, and we are justified in stating that a new era of teacher-training began in this country with the course in education given in 1860 at the University of Michigan.

There were interruptions in the lectures on education at Michigan. Similarly, at the University of Wisconsin a controversy arose which led to the separation of the state normal schools from the university. The first of the state universities which established a chair of education that has had a continuous history is the University of Iowa. In 1873 this institution appointed a professor whose duties were described as those of giving instruction in philosophy and pedagogy. In later years permanent departments were set up as follows: in 1879 at the University of Michigan; in 1881 at the University of Wisconsin; in 1884 at the University of North Carolina and at Johns Hopkins.

#### CAUSES OF THE ACCEPTANCE OF EDUCATION AS A PART OF THE COLLEGE CURRICULUM

The entrance of pedagogy, as it was commonly called, into this degree of recognition as a university subject was due in part to the growing recognition of the need for the training of high-school teachers. It was, however, much more a result of the development of what was

in due time to become a recognized body of philosophical and scientific principles constituting what is today known as the science of education. Both of these developments have their ultimate cause in the expansion of American education which characterized the last quarter of the nineteenth century.

The expansion of American civilization during the decades of the 70's and 80's brought with it a demand for improved education. During this period there was an increase of interest in secondary and higher education and a vast increase in attention to the sciences, physical and social. There was much migration of American students to European universities and as a consequence a liberal importation of the results of European research in all the fields of science and letters.

Among the effects of this expansion there was a great increase in the study of the processes and possibilities of education. Before 1880 the courses in education which had been offered in American normal schools and universities were either of the type described by the titles "Methods of Teaching" and "School Law" or they were more or less speculative philosophical courses given by professors of philosophy who followed the examples of Plato and Locke in outlining ideals of education which were, on the whole, remote from the actual practices of the schools. There was also some interest in the history of education. Historical investigation had established itself as a legitimate form of academic endeavor, and universities were willing to accept the history of education as possessing the qualities and characteristics of an approved member of the academic family of intellectual subjects.

#### EFFECTS OF DEVELOPMENT OF EXPERIMENTAL PSYCHOLOGY ON EDUCATION

With the beginning of the decade of the 80's a new impulse was given to educational studies by the importation of a subject which was closely enough related to philosophy to be accepted by the universities without hesitation, — namely, experimental psychology. The first center at which experimental psychology with applications to education was vigorously cultivated was Johns Hopkins University. Here, in 1884, Professor G. Stanley Hall, fresh from study with Wundt in Leipzig, initiated a movement afterward known as the child-study movement. He and his students aroused great enthusiasm in educational circles for the psychological study of children and for the reorganization of school methods on the basis of psychological studies.

The child-study movement exercised a strong influence in determining the character of university instruction in education during a quarter of a century, and has left its mark on normal-school curriculums by making psychology one of the staple courses in these curriculums.

#### IMPORTATION OF HERBARTIAN PEDAGOGY

In the meantime, while Hall was influencing university courses in education and was indirectly affecting the work of normal schools, a vigorous rejuvenation of the normal schools themselves was going on through the importation from Germany of the Herbartian pedagogy. Herbartianism came to America chiefly from Jena, where Professor Rein, one of the followers of Herbart, had set up a model school exemplifying the principles of Herbart's pedagogy.

The contribution of Herbartianism to American education was that it released the instruction in methods of teaching from the formalism into which it had fallen, and greatly expanded the content of elementary-school instruction by introducing new literary, historical, and scientific materials into the curriculum of the lower school.

While Herbartianism was first influential in the normal schools, it gradually found its way to some extent into university courses. It has never, however, been a dominant influence in the universities. Both the child-study movement and Herbartianism were forerunners to an independent development of the science of education which is characteristic of university departments today.

#### REPORT OF THE COMMITTEE OF TEN

A third line of influences which united with the child-study movement and Herbartianism to bring education into the universities had one of its earliest manifestations in an exhaustive report on the high school prepared by a committee of the National Education Association known as the Committee of Ten. The chairman of this committee was President Charles W. Eliot of Harvard University. The purpose of the committee was to extricate the high schools of the country from the chaotic condition into which they had fallen during the period of their first rapid development, during the 70's and 80's. High schools were dealing in various ways with the different subjects; class periods were of different lengths; the school year was of different lengths; the training of teachers was quite uncertain. In general it was impossible to speak of typical practices in American high schools. The

Committee of Ten was the first standardizing agency. It recommended forms of organization which, when adopted, as they were very generally, operated to make the high schools of the country much more alike in procedure than any American educational institutions had ever been.

The work of the Committee of Ten opened the way for studies of school operations in a field which did not belong to history of education, to psychology, or to methods, — namely, the field of administration. The methods of studying administration were not at first clear, but the problems were defined with such vividness that educators began to think about them vigorously. The decade of the 90's was a period of general discussion of administrative problems. The chief method of attack on these problems was committee deliberation, but a new movement had been launched.

#### BEGINNINGS OF MEASUREMENT

Late in the 90's several events contributed in an important way to the final emergence of a distinct science of education. Three such occurrences may be mentioned. In 1897 J. M. Rice, editor of *The Forum*, published an article in which he reported the results of some tests which he had made in the leading school systems of the United States on the spelling ability of pupils. This use of definite statistical methods to determine the effectiveness of methods of teaching supplied the technique which education needed to rescue it from the vagueness and ambiguity of mere pronouncements of opinion. From the date of Rice's paper on, education rapidly evolved into a science of measurements. The application of measurement methods spread rapidly in all fields of school work, and the first decade of the twentieth century saw measurement adopted as the accepted method of guiding school operations.

#### REORGANIZATION OF TEACHERS COLLEGE

The second event of major importance during the late 90's was the reorganization of Teachers College of Columbia University. This institution had been established in 1887 through the efforts of the then professor of philosophy, Nicholas Murray Butler. The institution had expanded and had come to occupy a unique position in American education, somewhere between the independent normal school, on the one hand, and the department of historical and psychological study of education in the university, on the other hand. In 1898 a

new executive head of the institution was appointed in the person of Dean James E. Russell, and the organization of a larger enterprise than had ever before been contemplated in any university department of education was launched. For a considerable period following this reorganization Teachers College of Columbia University was the center of scientific work in education for the whole country, and its graduates went to a great number of universities and colleges and normal schools as teachers of education and as executive heads.

### INFLUENCE OF DEWEY AND PARKER

Shortly after the reorganization of Teachers College an independent movement originated in the endeavors of John Dewey and Colonel Francis Parker at The University of Chicago to bring into education new emphasis on social problems and social methods of teaching. Dewey and some of his associates had organized an experimental school for the education of their own children. This school was opened in 1894 and became the nucleus around which The University of Chicago later organized its School of Education. The School of Education became a fact through the incorporation into the university of the Chicago Institute, an independent teacher-training institution organized by Francis Parker.

### CONCLUSIONS FROM HISTORICAL STATEMENT

Other influences than those explicitly mentioned in the foregoing paragraphs have contributed to the systematic treatment of professional education in the higher institutions of the United States, but enough has been described of the history of normal schools and of university departments of education to make clear the reasons why

1. Normal schools are separate from colleges and universities and often in competition with them.
2. The subject matter treated in courses in education is relatively uncertain as contrasted with the subject matter included under such definite academic classifications as Latin, physics, and mathematics.
3. The acceptance of education as an academic subject in the curriculum of universities has been slow and subject to some opposition by members of the established departments.

Turning from history to a discussion of current conditions, we may divide the remainder of this chapter into four parts as follows: organization of teacher-training in normal schools and teachers col-

leges; organization of teacher-training in academic colleges and in universities; the subject matter of courses in education; research in education.

### NORMAL SCHOOLS AND TEACHERS COLLEGES

There were formerly numerous privately conducted normal schools. These have been for the most part taken over by the states or closed because of inability to meet the competition of public normal schools. The typical normal school of the present time is a publicly controlled, state-supported institution.

The conditions of admission to normal schools were formerly, and are in some cases today, much less rigorous than are the conditions of admission to colleges. It was very general a generation ago for normal schools to receive as regular students persons who had completed no more than an elementary-school course. The normal school was, as pointed out in the historical sketch, originally of secondary-school rank. There was some justification, in the pioneer days in many of the Western states, for the low entrance requirements and for the free use which was often made of administrative discretion in relaxing all formal requirements. The normal school in many cases was the only institution accessible to the young people of the territory in which an education above that of the district school could be had. It was in a very real sense the people's high school and college. It performed the much-needed service of taking such promising young people as there were and transforming them as rapidly as possible into at least partially trained teachers for the common schools. As economic and social conditions improved, standards have been raised. The change was accomplished in part by the provision within normal schools of secondary-school courses which permitted students to make up deficiencies in their earlier training, and in part by requiring the completion of a high-school course as a requirement for admission. At the present time practically all the normal schools of the country are theoretically above the secondary level and require high-school graduation for regular admission. There is, however, evidence that this theoretical requirement is frequently relaxed, and the actual student population of these institutions is therefore less well trained than is the student body of American academical colleges.

The numbers of students registered in some of the larger normal schools have grown to be impressively large, and the annual appropriations made by the state legislatures are in many cases such as to provide material equipments which rival those of neighboring univer-

sities. Some examples of statistics<sup>2</sup> from the largest of the normal schools are as follows:

|                                 | TOTAL ENROLLMENT<br>FOR 1924 EXCLUSIVE<br>OF SUMMER SCHOOL | INCOME FOR 1923-<br>1924 FOR SALARIES,<br>MAINTENANCE, ETC. |
|---------------------------------|--|---|
| Greeley, Colorado. . . . .      | 1462   | \$405,864   |
| Bloomington, Illinois . . . . . | 1456   | 303,547   |
| Cedar Falls, Iowa . . . . .     | 2933   | 683,000   |
| Emporia, Kansas . . . . .       | 1228   | 308,000   |
| Kalamazoo, Michigan. . . . .    | 2055   | 433,525   |
| Ypsilanti, Michigan . . . . .   | 2614   | 497,982   |
| St. Cloud, Minnesota . . . . .  | 1081   | 150,000   |
| Springfield, Missouri . . . . . | 2293   | 157,226   |
| Durant, Oklahoma . . . . .      | 1164   | 121,000   |

### TRANSFORMATION OF NORMAL SCHOOLS INTO TEACHERS COLLEGES

As a consequence of the growth of the normal schools and of the establishment of a requirement of admission which demands that students shall have completed secondary-school work, it followed naturally that the normal schools some years ago began to ask for recognition of the same type as that accorded to academical colleges. Especially was the demand urged upon higher institutions that students who had completed courses in well-equipped normal schools should have their credits recognized without discount if these students wanted to become candidates for degrees at arts colleges or at universities.

A number of the normal schools also secured the right in their charters to grant degrees, and although at first the courses given by these schools covered only two years, it soon came to pass that the institutions took on the form of four-year colleges and adopted the name "state teachers college" as a substitute for the older name "normal school."

The evolution of normal schools into teachers colleges opens a series of questions which are still in debate. Shall the credits of teachers colleges which are in part professional in character be accepted by other institutions at full value when they are offered for academic degrees? Shall teachers colleges which were originally established to train teachers for elementary schools prepare teachers for high schools? Shall teachers colleges offer courses in strictly academic lines such as Latin and calculus? In short, is a line to be drawn between teacher-training colleges and academical colleges?

<sup>2</sup> *The North Central Association of Colleges and Secondary Schools. Proceedings of the Thirtieth Annual Meeting, March, 1925. Part 1.*

REPORT OF A COMMITTEE OF THE ASSOCIATION OF  
AMERICAN UNIVERSITIES

The most complete compilation of facts regarding the teachers colleges which is available is found in a report compiled in 1923 by a committee of the Association of American Universities. A part of this report is as follows :

There are in the United States 92 teachers colleges authorized by their charters or by general state laws to confer degrees. A series of questions was sent to each of the institutions of this type. Also the publications of the institutions were secured and analyzed. It was found that of the 92 teachers colleges, 10 have never exercised the degree-granting power. From 11 others no returns were secured. This report is accordingly based on returns from 71 of the institutions. The results of these investigations are summarized as follows. The first item which may be canvassed is the academic training of the members of the faculties (Table I).

TABLE I. AVERAGE NUMBER OF VARIOUS DEGREES HELD BY THE MEMBERS  
OF FACULTIES OF TEACHERS COLLEGES

|   |   |            |
|---|---|------------|
| Average number of members of faculty            | .....   | 45.2       |
| Average number of degrees per faculty           | $\left\{ \begin{array}{l} \text{Ph. D. and lower degrees,} \quad 2.1 \\ \text{A. M. and bachelor's degrees,} \quad 12.9 \\ \text{Bachelor's degrees only,} \quad 15.1 \end{array} \right\}$ | ..... 30.1 |
| Average number (per faculty) without any degree | .....   | 15.1       |

It was found that 26 of 69 teachers colleges have no members of the faculty with the Ph. D. degree; 12 have two; 11 have only one.

The entrance requirements and the requirements for graduation do not fall below the ordinary standard of 15 units and 120 hours in any case canvassed. Indeed, in several institutions the number of hours required for graduation are as many as 124 to 192, and entrance requirements often reach 16 units.

An effort to ascertain the character of the work required for graduation was made by asking the institutions to report on several matters. The first of these is the number of courses offered to which only students of the third and fourth college years are admitted. There are certainly 33 institutions and possibly more which have no courses which are open exclusively to juniors and seniors. This means that in many cases courses which are used as the basis of graduation for the degree serve also as the basis for the certificate given at the end of two years of work. Classes are therefore to be thought of as made up of both junior-college students and candidates for degrees.

A second matter is reported in Table II, which is a full table of the courses which are specified as required for various years of candidates for the degree.

A further question which was raised with regard to the character of instruction related to the grouping of advanced courses into sequences. Twenty-six institutions have no requirement of major or minor sequences for graduation; 42 have the requirement of a major; 39 require, in addition to the major, one minor; while 18 require, in addition to the first minor, a second.



The definition of these sequences varies. A major may consist of 16 semester hours at the lowest, and may reach 60 term hours at the maximum. The first minor ranges from 8 semester hours to 36 term hours, and the second minor from 8 semester hours to 29 term hours.

Five institutions require a thesis as part of the graduation requirement.

TABLE II. NUMBER OF CASES IN WHICH DESIGNATED SUBJECTS ARE SPECIFICALLY REQUIRED IN THE VARIOUS COLLEGE YEARS AS A BASIS OF GRADUATION<sup>3</sup>

| YEAR        | ENGLISH | EDUCATION | SOCIAL-<br>SCIENCE<br>HISTORY | NATURAL<br>SCIENCE | FOREIGN<br>LANGUAGE | MANUAL ARTS | GENERAL<br>PSYCHOLOGY | EDUCATIONAL<br>PSYCHOLOGY | MATHEMATICS | GEOGRAPHY | PRACTICE<br>TEACHING |
|-------------|---------|-----------|-------------------------------|--------------------|---------------------|-------------|-----------------------|---------------------------|-------------|-----------|----------------------|
| I . . . .   | 58      | 41        | 38                            | 41                 | 24                  | 3           | 27                    | 8                         | 17          | 7         | 8                    |
| II . . . .  | 44      | 40        | 41                            | 34                 | 22                  | 4           | 17                    | 4                         | 11          | 7         | 19                   |
| III . . . . | 31      | 48        | 25                            | 24                 | 17                  | 1           | 9                     | 11                        | 6           | 2         | 16                   |
| IV . . . .  | 26      | 43        | 30                            | 24                 | 17                  | 1           | 8                     | 5                         | 7           | 1         | 23                   |

CASES OF NO REQUIREMENT SPECIFIED

|  |   |    |    |    |    |   |    |    |    |   |    |
|--|---|----|----|----|----|---|----|----|----|---|----|
|  | 3 | 10 | 10 | 13 | 36 | — | 33 | 48 | 41 | — | 26 |
|--|---|----|----|----|----|---|----|----|----|---|----|

Curricula leading to degrees and certificates are to some extent differentiated. For example, candidates for the art certificate commonly are required to adopt a special grouping of their courses. The same is true of candidates in home economics, manual arts, etc. To some extent this differentiation refers to the grade of school in which the candidate expects to teach. Thus, there are kindergarten curricula and intermediate curricula; and in a few institutions junior-high-school curricula are set up with the explicit purpose of preparing teachers for junior high school. Also, in a few instances curricula of specialization in such subjects as history and science are provided with the purpose of preparing teachers for the high school. . . .

In describing the range of courses offered, many institutions of this grade make it clear that they do not intend to confine their activities to the training of elementary-school teachers. There are 60 cases in which the institutions state explicitly that they prepare teachers for all types of schools from the lowest to the highest, often specifying the kindergarten and the high schools.

The committee is led by its consideration of the facts presented in the foregoing paragraphs to the following factual conclusions:

1. The range of operations of the teachers colleges in this country represents a distinct expansion in all respects beyond the traditional purposes and equipment of the normal school.

<sup>3</sup>Not all the institutions supplied data. The figures represent the number of cases in which some form of positive evidence was available, showing the requirement or absence of requirement reported.

2. The teachers colleges are at the present time unstandardized. In some cases these institutions are unorganized in the sequences of courses which they require for graduation, and they are staffed by persons of inadequate scholarly training. In other cases the teachers colleges have successfully adopted the form of organization of the standard institutions of higher learning.

3. The development of degree-granting activities in teachers colleges is going forward rapidly.

The committee believes that the productive attitude which the Association of American Universities can and should assume toward the teachers colleges is one of pointed criticism of every instance in which such an institution conducts its work through a faculty of meager training or in the form of curricula which are little systematized. On the other hand, the Association should hospitably welcome into academic relations all students who come from teachers colleges that will adopt and maintain high scholarly standards.

To these ends it is recommended that the association adopt the following statement:

The admission of graduates of teachers colleges to standing in graduate schools must, for the time being, depend on the scrutiny of the individual records. Where such records show that a student has pursued coherent groups of courses, and where the evidence shows that these courses have been administered by instructors of adequate scholarly training, the student should be admitted to candidacy for the master's degree in full standing.

The Association should express itself as opposed to any system of admission to graduate schools which is based on considerations other than those mentioned in the foregoing paragraphs. Specifically, it should express itself as opposed to the enactment of legislation compelling graduate schools to accept graduates of teachers colleges regardless of such considerations.

Finally, the Association should express to those teachers colleges which are assuming leadership in the establishment of high scholarly standards its desire to cooperate in every possible way in the promotion of a movement which shall make it impossible for the bachelor's degree to be awarded by institutions which do not organize their courses systematically and under conditions favorable to a high grade of scholarly work.<sup>4</sup>

The foregoing report was adopted by the Association of American Universities and represents fairly the judgment of the higher institutions of learning of the United States with regard to the present stage of development of the separated teacher-training institutions.

#### SPECIAL FORMS OF ORGANIZATION FOR TEACHER-TRAINING

Before leaving the discussion of the teachers colleges it is important for the understanding of the work in education which is provided in academic colleges and universities that reference be made to two prob-

<sup>4</sup> *The Association of American Universities. Journal of Proceedings and Addresses of the Twenty-fifth Annual Conference, held at the University of Virginia, November 9 and 10, 1923.*

lems of internal organization which are of major importance in the organization of curriculums for the professional training of teachers.

The first of these problems arises from the recognized practical need for opportunity to introduce teachers-in-training to direct experience in teaching and class management.

All normal schools have what are variously known as practice schools, demonstration schools, or model schools. As long as the number of students in a given normal school remains small, there is usually no difficulty in arranging, either with the local school board or through the organization of a special elementary school under the direct supervision of the normal school, for the desired opportunity to observe and practice which the normal school needs to include in its curriculum. To be sure, the time given to practice and observation, even under favorable conditions, is difficult to evaluate in terms familiar to members of the faculty of academic colleges. When, however, a normal school grows large, it becomes increasingly difficult and ultimately quite impossible to provide suitable observation and practice facilities. In Germany it was the practice before the war to limit every teacher-training institution in its registration to 60 students. In this country normal schools welcome student registrations to the point where the student body is several times as large as the number of pupils in the practice school.

Securing facilities for the practice, or apprenticeship, phase of normal training is one of the serious problems of administration of departments and schools of education. When the colleges undertake to train teachers, they have, in general, no practice facilities whatsoever and are for this reason severely criticized by the normal schools.

A second grave problem is that of adjusting the relation between academical subjects and professional subjects. This is a problem which has arisen in all countries. Some countries — Canada, for example — have settled the matter by requiring a student to complete his academic training before being admitted to the professional courses of the teacher-training institution. In the United States the practice has been to require academic work and professional work simultaneously, the time being divided between the two in such measure as the particular institution determines. There has been the widest divergence in practice in this matter.

Perhaps the most general statement that can be made in regard to professional and academic courses is that normal schools have given great prominence to professional courses (such as history of education, methods, and psychology) and to reviews of the elementary subjects (such as arithmetic and spelling), and have given relatively little heed

to general education, while colleges have, on the contrary, given chief place to academic courses and have reduced professional courses and review courses to a minimum.

At the present time, when normal schools are transforming themselves into colleges, they are giving more attention than formerly to academic subjects; but because of the necessity of providing for a very large body of students who are to be in residence only two years, the normal schools usually group the academic, or general, subjects in the third and fourth years of the curriculum, thus reversing the practice which is typical of academical colleges which give training to teachers-in-preparation.

#### ORGANIZATION OF DEPARTMENTS OF EDUCATION

The organization of departments of education in colleges and universities has resulted, in a few cases, from the combination of a state university and a state normal school. This is the situation in Wyoming, Nevada, and Utah. In some cases a normal department of a state university has been organized, as in Miami University at Oxford, Ohio, and Ohio University at Athens, Ohio.

In general the schools of education and departments of education in colleges and universities are different in purpose and student body from the normal schools in the corresponding territories. In a great many of the states it is clearly understood and sometimes determined by official ruling that the state university shall limit its operations to the professional training of high-school teachers and supervisors, and shall leave the training of elementary teachers to the normal schools.

The emphasis on training for high-school teaching, which is common in all college and university training of teachers, results in a much larger inclusion of strictly academic courses in teacher-training curriculums than is common in the normal schools. Indeed, it may be said without danger of contradiction that the general attitude of the majority of the members of college faculties is that the preparation of a student to become a teacher should consist largely or entirely in a thorough grounding in the subjects to be taught. There is slight regard, in many academic quarters, for professional courses.

Practical school administrators are convinced of the importance of professional training. Standardizing associations, such as the North Central Association of Colleges and Secondary Schools, have taken action in conformity with the judgment of practical administrators and have made some professional training a requirement for appointment to positions on the faculties of approved high schools. Similar

action has been taken by many state departments of education. The result of such prescriptions of professional training is that colleges have been compelled, often in the face of their own preference, to install and conduct professional courses.

The reluctance of colleges to enter whole-heartedly into the professional training of teachers is manifest in certain subterfuges which are by no means uncommon in the organization of courses for teachers. An instructor in history or mathematics who believes that knowledge of subject matter and native aptitude for teaching are what make a teacher, will announce a course in American history for teachers, or in algebra for teachers, which differs from other courses in the same subject matter only in title. Such courses are frequently offered to standardizing agencies as satisfying their requirements. It may be added that such courses are not infrequently accepted by the standardizing agencies. The situation with regard to courses in professional subjects is even more ambiguous. The present writer knows of a case in which a college reported a course in French literature as satisfying the requirement for a history of education. When a question was raised with reference to the propriety of this procedure, the institution made reply to the effect that Rousseau was discussed in the course to an extent justifying the claim that it gave students an insight into the history of education.

#### SEPARATION OF DEPARTMENTS OF EDUCATION AND ACADEMIC DEPARTMENTS

The type of reluctance to organize the work in education on a sound basis, which is illustrated in the examples cited, has led many who are genuinely concerned with the training of teachers to advocate as complete a separation as possible between the department of education in colleges and the academic divisions of these institutions. The academic divisions have in many instances reciprocated in this desire for separation. The result is that in many of the higher institutions separate faculties have been organized and quasi-professional schools of education have been set up for the purpose of administering courses in education and for the purpose of controlling, without interference from unfriendly academic faculties, the requirements for the educational degrees.

The separation has in some instances gone so far as to exclude students who specialize in education from receiving the degrees awarded to academic students. In Harvard the School of Education does not administer at the graduate level the degrees of master of arts or doctor

of philosophy, but gives degrees designated as master and doctor of education. Teachers College of Columbia University has a connection with Columbia University so far as exchange of academic credits is concerned, but has a separate board of trustees and an independent financial organization. From these extreme types of separation to complete amalgamation of the departments in the college or university there are all varieties of partial fusion or dissociation of courses in education and courses in other academic subjects.

The situation in which education finds itself is unique, because it is at one and the same time a professional subject and an academic subject. The meaning of this statement will be clear if one contrasts education with such a purely professional subject as law. Law has a body of subject matter peculiar to itself. The line can be drawn between courses in torts and courses in political science or political economy without involving any serious overlapping. On the other hand, when education is administered to a prospective teacher it is very difficult, if not impossible, to make a sharp distinction between the subject which the teacher is going to teach and the professional courses which he pursues in preparing himself for his work. For example, a person who is going to teach history must study history first of all, and he must be competent in the subject matter of that department or he will not be professionally equipped. In a very proper sense of the word history is a professional subject.

At the other end of the scale from the subject-matter courses stands the work in practice teaching. There are many institutions which require practical experience in the classroom as a part of the training of the teacher-in-preparation. Some states have incorporated such a requirement into the laws relating to certification. How far practice teaching, which is somewhat analogous to the training given to an interne in the medical school, can be made equivalent to an academic course is one of the questions on which university faculties are divided.

It is for such reasons as have been sketched in the last two paragraphs that education must be defined as only quasi-professional in character. It is much more closely related to the whole range of subjects taught in the schools than these subjects are to one another. This intimate connection is at once an advantage and a disadvantage. It leads to complications quite as frequently as it provides for coöperation.

The tendency to distinguish between education and the academic subjects is strengthened by the fact that up to the present time the relations of the science of education have been almost exclusively

with the high school and elementary school. Very little has been done by way of study of the problems of college teaching. A few productive studies have been made in the fields of college financial administration and of college personnel administration. Up to the present time methods of teaching have been subjects thought of as pertaining to high-school teaching and elementary teaching exclusively. How long it will be before young instructors in college receive any professional training beyond that which comes from the example and personal advice of experienced teachers is a matter on which only the future can throw light. The fact is that at the present time college teaching is treated very little or not at all in departments and schools of education.

#### TRAINING OF MEMBERS OF THE STAFF IN DEPARTMENTS OF EDUCATION

The training of college and university teachers of education has been of two types: On the one hand, the graduate schools of education, several of which have sprung up since the reorganization of Teachers College in 1898, have been sending into the colleges and universities teachers who are more or less trained in the techniques of scientific investigation. They usually have advanced graduate degrees and aim to give their teaching a distinctly scientific character. On the other hand, there are, especially in the small colleges, a great many teachers of education who have not secured advanced degrees but were appointed on the ground of their experience in school work. Former superintendents of schools and teachers and principals of high schools are given positions in departments of education on the theory that they can impart to teachers-in-training practical views of classroom work. The characteristic facts with regard to the training of normal-school teachers which were given in the paragraphs quoted from the report of the Committee of the Association of American Universities are paralleled in some degree in departments of education in the academic colleges.

There can be no doubt that the progress of education as a professional subject has been in some degree impeded by the urgent demand for teachers in the lower schools of the United States and by the fact that salaries in teaching positions are not high. When it is recalled that less than a generation ago professional training of any kind was uncommon, and that special requirements for admission to high-school positions were quite unknown until very recently, it is easy to understand that progress in the professionalization of school work has been

difficult. Referring to a fact which was brought out in the discussion of teachers colleges, it will be recalled that these institutions are devoting much attention to the preparation of high-school teachers. In defense of their practice it is pointed out that many high schools, especially those in the smaller towns, are unable to secure persons who have had training in academic colleges. There has been, as a result, a strong tendency in many quarters to relax requirements for admission to divisions of colleges and universities which deal with teachers. This tendency is resisted by those departments and schools of education which are most intimately fused with the other academic departments.

### SUMMER SCHOOLS

One phase of college and university organization which is intimately related to the work in education is that which is exhibited in the summer sessions of these institutions. Beginning thirty years ago in a few universities, summer schools have come to be altogether common. They are attended at the present time by large numbers of students, most of whom are engaged during the remainder of the year in teaching. The attendance on summer sessions has been greatly stimulated by school systems in all parts of the country. A bonus for attendance on summer sessions, either in the form of direct payment of a single sum or in the form of an increase in salary, is very common.

In a number of institutions the summer session takes the form of a regular part of the academic year. Even in such cases, however, the student body in attendance during the summer is usually different from that which is to be found in the same institution at other periods of the year. The summer attendance is made up chiefly of teachers.

### EDUCATIONAL RESEARCH

One obligation which rests on departments and schools of education in a unique degree is the obligation of carrying on research. As contrasted with the natural sciences, which are stimulated and often supported by industry, and as contrasted with the older academic subjects, which are sufficiently established so that they do not have to offer any special arguments in support of their research programs, education is in a peculiar position. The practical fields in which educational principles are applied — namely, the school systems of the country — are for the most part so engrossed in routine and so ill equipped financially that they have little energy to devote to research.



The university departments of education have done more to carry the science of education into the schools than the schools themselves have been able to do by way of stimulating investigations. Departments of education have accordingly found it necessary to perform the double task of teaching teachers and at the same time producing the materials of a new science. This double duty has been discharged only at a few of the larger centers. Education as a science has for this reason made much slower progress than have some of the other younger sciences.

#### DEVELOPMENT OF COURSES IN EDUCATION

In spite of the difficulties which have been described in the foregoing paragraphs, education has made enormous progress in the last twenty-five years. Some account of this progress can be given by canvassing the subject matter which enters into the undergraduate curriculums in education, and by a brief reference to some of the most important lines of current research.

Instruction in education was at first made up, as was stated in the historical introduction to this chapter, of courses in methods of teaching, philosophy, and the history of education. Courses in psychology were also early made a part of the education curriculum.

Recent years have seen a very great extension of these courses. School administration has been extensively treated, and tests and measures have been made a regular part of the work of all students.

A recent report of a Committee of the North Central Association of Colleges and Secondary Schools presents as full a statement of the undergraduate courses in education as is accessible in educational literature. Two sections of this report may be quoted, the first showing the variations which appear in current practice and the second presenting the recommendations of the committee.

The paragraphs from the report of this committee are as follows:

#### REPORT OF A COMMITTEE OF THE NORTH CENTRAL ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS

In Table A we give the number of semester hours of work offered in educational psychology, methods of teaching, principles of secondary education, school administration, philosophy of education, and history of education by a selected group of institutions which illustrate extremes in the distribution of courses. Institution 48 offers eight semester hours of work in educational psychology, none in methods of teaching, six in principles of secondary education, six in school administration, and six in history of education. Institution 94 offers six hours of educational psychology, none in methods of teaching,

principles of secondary education, and school administration, ten hours of philosophy of education, and eight hours of history of education. An examination of Table A will reveal other types of variation.

TABLE A. DISTRIBUTION OF EDUCATION COURSES WITH CERTAIN TEACHER-TRAINING INSTITUTIONS. COURSES ARE MEASURED IN TERMS OF SEMESTER HOURS

| INSTITUTION | EDUCATIONAL<br>PSYCHOLOGY | METHODS<br>OF<br>TEACHING | PRINCIPLES<br>OF<br>SECONDARY<br>EDUCATION | SCHOOL<br>ADMINIS-<br>TRATION | PHILOSOPHY<br>OF<br>EDUCATION | HISTORY<br>OF<br>EDUCATION |
|-------------|---------------------------|---------------------------|--|-------------------------------|-------------------------------|----------------------------|
| 48          | 8                         | 0                         | 6  | 6                             | 0                             | 6                          |
| 36          | 10                        | 5                         | 0  | 3                             | 0                             | 5                          |
| 35          | 6                         | 0                         | 0  | 0                             | 3                             | 3                          |
| 144         | 0                         | 9                         | 0  | 0                             | 0                             | 6                          |
| 60          | 12                        | 12                        | 0  | 0                             | 3                             | 3                          |
| 135         | 7                         | 10½                       | 0  | 3                             | 3                             | 3                          |
| 83          | 10                        | 20                        | 2  | 7                             | 3                             | 3                          |
| 87          | 7½                        | 18½                       | 3½   | 3½                            | 0                             | 3½                         |
| 94          | 6                         | 0                         | 0  | 0                             | 10                            | 8                          |
| 90          | 6                         | 0                         | 6  | 0                             | 0                             | 3                          |
| 96          | 12                        | 3                         | 3  | 6                             | 0                             | 6                          |
| 136         | 7½                        | 10½                       | 4  | 4                             | 0                             | 4                          |
| 134         | 6                         | 0                         | 0  | 3                             | 0                             | 3                          |
| 68          | 3                         | 12                        | 2  | 3                             | 6                             | 6                          |
| 73          | 6                         | 12                        | 0  | 0                             | 0                             | 3                          |
| 11          | 3                         | 8                         | 0  | 0                             | 6                             | 9                          |
| 91          | 12                        | 6                         | 2  | 6                             | 2                             | 4                          |
| 118         | 4                         | 23                        | 4  | 7½                            | 4                             | 15                         |
| 125         | 18                        | 3                         | 0  | 3                             | 0                             | 3                          |
| 26          | 6                         | 0                         | 6  | 3                             | 0                             | 3                          |
| 129         | 0                         | 11                        | 0  | 7½                            | 4                             | 7½                         |
| 63          | 0                         | 9                         | 3  | 3                             | 0                             | 6                          |
| 56          | 5                         | 6                         | 0  | 0                             | 0                             | 12                         |

Three institutions offer twelve hours of educational psychology, and one, eighteen hours, but there are three others which offer no educational psychology.

Table B summarizes in distribution form the number of semester hours offered by 139 institutions in educational psychology, methods of teaching, principles of secondary education, school administration, philosophy of education, and history of education. The total offerings in educational psychology measured in semester hours vary from zero in ten institutions to eighteen hours in one institution. There are distinct nodes at three hours and at six hours. The total offerings in methods of teaching vary from zero in eight institutions to fifteen hours or more in four institutions. Similar variations occur in the distributions for each of the other rubrics of courses.

It is quite obvious from an examination of the Tables that the departments of education in the different institutions have very different ideas concerning the program of courses which they should offer to students. One factor contributing to this difference is the variation in the general function of the insti-

tutions. Some normal schools and teachers colleges recognize the training of teachers for elementary schools as an important function. Some institutions are located in a peculiar environment, and for that reason may be trying to render a unique service. It does not appear possible, however, to justify the existing variations in the programs of courses on the basis of differences in purpose.

TABLE B. DISTRIBUTION OF TOTAL NUMBER OF COURSES OFFERED IN SIX DIVISIONS OF THE FIELD OF EDUCATION

| HOURS OFFERED | EDUCATIONAL PSYCHOLOGY | METHODS OF TEACHING | PRINCIPLES OF SECONDARY EDUCATION | SCHOOL ADMINISTRATION | PHILOSOPHY OF EDUCATION | HISTORY OF EDUCATION |
|---------------|------------------------|---------------------|-----------------------------------|-----------------------|-------------------------|----------------------|
| 18            | 1                      | 3                   |                                   | 1                     |                         |                      |
| 15            |                        | 1                   |                                   |                       |                         | 1                    |
| 12            | 5                      | 3                   | 1                                 | 1                     |                         | 1                    |
| 11            |                        | 3                   |                                   |                       |                         |                      |
| 10            | 4                      | 4                   |                                   |                       | 1                       | 1                    |
| 8             | 3                      | 11                  | 2                                 | 2                     |                         | 2                    |
| 9             | 4                      | 4                   |                                   | 1                     |                         | 5                    |
| 7             | 7                      | 3                   | 2                                 | 8                     |                         | 2                    |
| 6             | 34                     | 28                  | 11                                | 13                    | 5                       | 29                   |
| 5             | 6                      | 9                   | 4                                 | 4                     | 1                       | 7                    |
| 4             | 11                     | 18                  | 10                                | 3                     | 6                       | 16                   |
| 3             | 48                     | 34                  | 36                                | 46                    | 31                      | 55                   |
| 2             | 6                      | 10                  | 17                                | 16                    | 15                      | 6                    |
| 1             |                        |                     | 1                                 | 1                     | 1                       |                      |
| 0             | 10                     | 8                   | 54                                | 43                    | 79                      | 14                   |
|               | 139                    | 139                 | 138                               | 139                   | 139                     | 139                  |

Whenever a situation is characterized by variety rather than by uniformity, we generally conclude that inefficiency exists in those cases which depart greatly from the average practice. The degree of variation in the distribution of courses which has been shown to exist is believed to be indicative of inefficiency in the professional training of prospective high-school teachers.

#### SUMMARY OF PRINCIPLES

1. It is desirable that there should be uniformity in the nomenclature of the titles in undergraduate courses in education. For the courses most frequently offered the following titles are recommended :

- Educational psychology
- Methods of teaching
- Special methods in practice teaching
- Principles of secondary education
- History of education
- School administration (high-school administration)
- Supervision of instruction
- Philosophy of education
- Educational measurements

2. Tentatively we suggest as the three basic elementary courses: (Tentative) educational psychology, a study of the child with particular reference to the learning process; methods of teaching, a study of the stimulation and direction of learning by teachers; and principles of secondary education, a study of the purpose of secondary education and the organization of the high school with particular reference to the problems of the teacher.

3. Guiding principles for the organization of other undergraduate courses in education:

a. The content of a course should be carefully selected on the basis of its value to teachers, principals, superintendents, and supervisors.

b. In organizing courses in education the duplication of content should be reduced to a desirable minimum.

c. The undergraduate courses offered by an institution should form a well-balanced program.

4. Desirable undergraduate courses in education in addition to the three designated above as basic are as follows:

Special-methods courses in various high-school subjects

Practice teaching

History of education

School administration

Supervision of instruction

Secondary course in educational psychology

Educational measurements (when designed for teachers in the elementary school or junior high school)

5. Types of courses undesirable:

a. Any course whose content duplicates to any considerable extent that of any other course.

b. Any course whose content does not possess reasonably high value for teachers, principals, superintendents, or supervisors.

6. Courses in pure psychology, sociology, ethics, philosophy, and economics should not be accepted as education.

7. a. In the case of an institution which confines its teacher-training efforts to the secondary field a commendable program of course offerings may be achieved with a total of twelve to fifteen semester hours in addition to such courses as may be offered in special methods, practice teaching, agricultural education, and industrial education.

b. When the undergraduate-course offerings in education, in addition to special methods, practice teaching, agricultural education, industrial education, and other special courses, exceed approximately thirty-five semester hours, there is likely to be undesirable duplication of content or the inclusion of subject matter of doubtful value.<sup>5</sup>

To the list of courses described and recommended by this committee must be added a course which in recent years has been steadily increas-

<sup>5</sup> *The North Central Association of Colleges and Secondary Schools. Proceedings of the Thirtieth Annual Meeting, March, 1925. Part 2, pp. 154-157, 161-162.*

ing in popularity, — namely, the course in introduction to education. This course finds its justification in the fact that college students who have passed through the elementary school and high school usually have no knowledge whatsoever of the organization of the system which has been in charge of their education. The pupil in school does not know much, if anything, about compulsory-education laws, about school finance, about the functions of the board of education, and like matters. If this pupil is to mature into an intelligent teacher, it will be necessary for him to gain some general idea of the nature of the school system as a whole. It has been found that a broad survey course placed near the beginning of the student's professional training does much to orient all his later thinking.

#### EDUCATIONAL PSYCHOLOGY AS TYPICAL

Another comment which may properly be added to the foregoing and to the quotations from the report of the committee is that in the various subjects administered by departments of education there is going forward a constant readjustment and enlargement. Perhaps the expansions in education are more noticeable than in most departments of higher education. One example will suffice to make clear the meaning of this statement. Since psychology was adopted into the group of education courses, there has been violent disagreement as to the type of psychology which should be taught to teachers. Some hold that general psychology of the kind taught to all academic students is the most desirable and also the most appropriate because of its dignified and scientific character. Others hold that general psychology is too abstract and barren of applications. The critics of general psychology sometimes go so far as to advocate the development of an entirely separate course, to be known as educational psychology, to be made up of a discussion of the mental processes of school children when they are mastering reading, arithmetic, and the other subjects which are taught in the schools.

In the effort to adjust matters numerous experiments are being tried. There are courses in general psychology, courses in the psychology of school subjects, courses in the psychology of the learning process, and a variety of combinations of such special types of psychology. Lately social psychology has been included. In general it may be said that the problem of what psychology is to be taught in teacher-training institutions is wholly undecided.

## EXAMPLES OF RESEARCH IN EDUCATION

What has been said regarding the undergraduate curriculum and the novelty and uncertainty of many of its courses can be amplified and to some extent made clearer by describing briefly the graduate research in education. At the same time it will be possible, in the discussion of the constructive work which goes on in the graduate school, to give a somewhat detailed account of the methods and scope of the science of education. Three examples of research problems in education will be treated at some length as typical. The first of these will be an administrative problem; the second, a psychological problem; and the third, a problem in methods of teaching. In the course of the treatment of these problems it will be possible to describe the various methods of investigation employed in education, — specifically, the statistical and comparative methods, the laboratory and analytical methods, and the methods of testing and measuring results, or the method of the educational survey. Incidentally, this whole chapter has illustrated the historical method of dealing with the problems which arise in the course of institutional development.

The administrative problem which will be discussed was recently made the subject of an investigation by a national commission. It is a problem which grows out of the fact that in the different parts of the United States there are elementary schools made up of different numbers of grades. In most of the Northern states there are eight grades in the elementary school. In a few centers in New England there are nine grades. In several of the Southern states there are only seven grades in the elementary school. In recent years, with the organization of the junior high school, a very general tendency has appeared to reduce elementary education to six years.

The variations described raise emphatically a question regarding the efficiency of the results secured by the various systems. If the seven-grade systems accomplish all that is essential in elementary subjects, it is evidently questionable policy to extend the period of schooling through one or two grades above the seventh. If, on the other hand, the seven-grade systems fail to secure certain results which are important, it may be that the states which have such systems should be exhorted to change.

## EXAMPLE OF THE APPLICATION METHOD

The first task of the commission which undertook to investigate the length of elementary education was to make a survey of the country in order to ascertain in some detail the practices of different

areas. Reports were accordingly secured from about six hundred systems which were thought to be typical of their respective sections of the country. In selecting the centers to be examined the commission had the coöperation of state departments of education.

The reports from the various systems were secured in as nearly comparable a form as possible, and covered a number of items which are crucial to any evaluation of the types of organization found in the different centers. Thus it was necessary to find out not only the number of grades in the elementary schools but also the ages at which pupils enter and the ages at which they complete the work of these schools. It was necessary to ascertain what constitutes the courses of instruction. One school system may include in its curriculum a large number of subjects with the explicit purpose of giving its pupils a broad education, while another system may concentrate on a very limited number of subjects with the purpose of giving very thorough training in fundamentals. The length of the school day may vary, and the length of the school year. The degree and the type of supervision may vary. The social and economic conditions of pupils may be very different in different systems.

The reports on such matters as were mentioned in the last paragraph being collected, tables were made up showing the facts for each center and the median facts for each state. It was found in general that school systems having only seven grades had in each of the grades pupils of more mature chronological age than were to be found in the school systems which included eight grades in the elementary schools. It was found that some of the systems having the smaller number of grades administered a meager curriculum.

The tables made it perfectly clear that any simple comparison between the results of elementary schooling in different systems would be entirely misleading. The commission therefore sought in the second stage of its survey to find some systems which were enough alike in other respects to justify a measurement of the results secured in schools having different numbers of grades. The state of Maryland was found to have three counties in which the elementary schools included only seven years. The other counties of the state had eight-grade systems. All counties had supervision, and all used approximately the same courses of study. With the aid of the state department of education the commission arranged to have a series of standard tests made in three seven-grade counties and in three eight-grade counties. These tests were given in May, near the end of the school year, and were taken by all pupils in all the seventh grades and in the first year of the high school, and, where there were eighth grades, by all pupils in these grades.

In addition to these results of tests the commission obtained statistics of the standings, in college, of students who had their elementary training in the two types of school.

The result of the comparisons made under these closely related conditions can be summarized briefly by saying that wherever there are eighth grades the pupils show some advance in their school work over the pupils in the seventh grades of the same county. There was, however, no marked difference between the achievements in the different counties, the best of the seven-grade counties ranking very high on all tests.

A similar comparison was undertaken between seven cities in different parts of the United States, some of which had seven-grade systems and some of which had eight-grade systems. In this comparison the seven-grade systems showed so high a level of achievement as to justify serious doubt as to the economy of an eight-grade organization.

In preparing the tables for the comparisons made in the surveys described, extensive use was made of statistical methods. In general it may be said that wherever administrative problems of broad scope are taken up statistical calculations are necessary.

### A PSYCHOLOGICAL STUDY

An example of a psychological study of an educational problem made by the laboratory method can be borrowed from a recent publication dealing with the mental processes involved in arithmetic. The extracts quoted from this study are from the introductory chapter, which describes certain simple experiments that can be performed without elaborate apparatus. The study from which the quotations are made went further than is here indicated, and elaborated what is here said by the use of apparatus and by rigid quantitative measurement of a large number of persons. The passages showing the general character of the experiment are as follows:

#### COUNTING AS AN INDIVIDUAL ABILITY AND AS A RACIAL MODE OF DEALING WITH EXPERIENCES<sup>6</sup>

##### INTRODUCTION

The investigations reported in this monograph deal with the mental processes of adults and children when they are counting or marking the simpler number combinations. The reader can gain a general understanding of some of the methods employed and of the type of psychological conclusion reached if he will try a few simple experiments which require no more elaborate equipment than a watch, a pencil, a sheet of paper, and a book.

<sup>6</sup> Charles H. Judd. *Psychological Analysis of the Fundamentals of Arithmetic*. (Supplementary Educational Monograph No. 32.) University of Chicago, 1927.



## MEASURING RATES OF COUNTING ALOUD

The first experiment consists in counting aloud as fast as possible for ten seconds, using the number names from "one" to "ten," inclusive, and repeating the series as often as possible. The result will be somewhere between six and nine series, depending on the fluency of the individual. The second experiment is like the first except that the number names from "one" to "twenty," inclusive, are used. The counting which involves the articulation of the longer words — "eleven," "twelve," "thirteen," etc. — will cover in the aggregate from 25 to 35 per cent fewer numbers than the counting which is limited to the use of the number names from "one" to "ten."

## COUNTING SILENTLY

The third and fourth experiments are like the first and second except that the counting is done silently. The results when one counts silently are, in most instances, not very different from the results secured in counting aloud. There are a few persons who are slower in silent counting than in counting aloud. A few are faster. Whatever the variations in rate of silent counting from the rate of counting aloud, the relation of the aggregate number covered when counting up to "ten" to the aggregate number covered when counting up to "twenty" is the same for counting silently as for counting aloud. Counting up to "twenty" is accordingly shown to be slower by an appreciable percentage in all cases.

## ALL COUNTING INVOLVES THE USE OF NUMBER NAMES

The fact that the rate of counting up to "twenty" is slow as contrasted with the rate of counting up to "ten" throws light on the psychology of all counting. The slower rate of counting up to "twenty" makes it clear that counting is a mental process which uses number names and depends for its rate on the character of the number names employed. The mental process of counting up to "twenty" is slow under all conditions because the number names from "eleven" to "twenty" are elaborate. Number names are the devices or means which the mind has to use in performing its processes of enumerating. Especially significant is the fact that the psychological process involved in counting is not freed from its dependence on number names even when one counts silently. Most observers note that there is a strong disposition during silent counting to make movements with the tongue and with the vocal apparatus. Some persons, indeed, are so disturbed by the demand that they suppress articulation that they count more slowly silently than aloud and sometimes become entirely confused, especially between "eleven" and "twenty."

## COUNTING BEYOND "TWENTY"

Similar experiments can be tried to determine the rate of counting from "twenty-one" to "thirty," from "thirty-one" to "forty," and so on. It will be found that there are three distinct methods of counting in these sections of

the number system. Some persons give full emphasis to the "twenty" part of each of the number names from "twenty-one" to "twenty-nine." In both oral and silent counting they use the full words "twenty-one," "twenty-two," and so on. A second group of persons slur the "twenty" and lay emphasis on the "one," "two," "three." A third class of persons omit altogether the "twenty" after the first use of the word to mark the transition from "nineteen." They say "twenty, one, two, three," and so on until they reach "thirty." Those who belong to the first group, that is, those who use the "twenty" with full emphasis, are slow. Those who omit the "twenty," "thirty," "forty," and so on are rapid, but, in counting long series, they are likely to make mistakes; they sometimes repeat a decade or omit a decade. The persons who have learned to slur the name of the particular decade are intermediate in speed and, as contrasted with the very rapid group, are sure of their position in long series.

#### RELATION OF TAPPING AND COUNTING

The reader who has tried the experiments thus far described can now carry the analysis of his counting somewhat further. Let him take a pencil and a sheet of paper and, with his watch before him, make as many marks as he can by tapping on the paper for ten seconds. On counting the marks he will find a very striking similarity between the number of taps made and the aggregate number which he covered when he counted up to "ten" for ten seconds. In other words, the rate at which one can send motor impulses to the hand is very closely related to the rate at which one can send simple motor impulses to the vocal cords. There is evidently a close relation between the two kinds of action. A further important fact to note in this connection is that both making marks and counting by using the number names from "one" to "ten" are among the most rapid reactions of which an individual is capable. If one tries to tap with the foot or to nod the head as fast as possible, one finds that the rate is slower than that attained in counting or in making marks. Counting by means of the number names from "one" to "ten" is thus shown to be a very fluent process.

#### MATCHING THE NUMBER SERIES TO VISUAL OBJECTS

Let the experimenter now change conditions once more. This time the effort is to discover how rapidly one can count a series of objects. The most available series of objects for convenient testing outside the laboratory will be found in the letters on a printed page. The experiment requires that the eyes be fixed on the page and not on the individual's watch. A convenient method of procedure is as follows: Let the experimenter place his pencil on a letter at the beginning of a line and then look at his watch until the second hand reaches one of the major points on the dial. Let him now look away from the watch to the book and count letters as fast as he can. Let him count until he has covered as many letters as he covered numbers when he counted aloud from "one" to "ten" for ten seconds. In order to make the experiment strictly comparable with the first experiment the experimenter should use only the number names

from "one" to "ten" in counting. When he has covered from sixty to ninety letters, as the case may require, let the experimenter look at his watch. He will find that he consumed from twenty to twenty-five seconds in counting as many letters as he repeated number names from "one" to "ten" in ten seconds. Evidently the application of number names to a particular series of objects involves something more than the mere ability to say the number names. There must be some discrimination of the objects counted, and there must be an application of the separate number names to the individual objects discriminated.

Counting visual objects is thus seen to be a complex process. The person who counts has within himself an established series of reactions which he has so fully mastered that he can execute them at his maximum physiological rate. When he attempts to apply his developed reactions to objects which he sees with his eyes, he cannot react with the speed that is possible when he is merely repeating the number names silently. Counting things is a more complex process than repeating the names of the numbers.

#### INDIVIDUAL DIFFERENCES IN COUNTING

If the reader can extend his inquiry by experimenting on a number of persons, he will find some further interesting facts. He will find that there are marked individual differences in all the processes under discussion. Differences in rate will be especially conspicuous if the experiments are tried on both adults and children. If certain children below the age of ten are observed, the rate of counting will be found to be very slow. The relative complexity of the different kinds of counting will, however, be found to be the same in spite of the individual differences which appear.

#### COUNTING AS AN ACTIVE PROCESS

On the basis of the facts presented, several psychological generalizations are justified. First, counting is an active process. The individual who counts is not a passive recipient of impressions; impressions, however strong in themselves, do not bring the number series to the mind. The number series is something which the individual imposes on the world by his active responses. Second, it is evident that the active process involved in counting is related to the individual's nervous organization and cannot take place any faster than the nervous system can send out motor impulses. Third, the differences between the rates of various kinds of counting which are exhibited regularly by children and adults lead to the conclusion that the active process of counting is one which matures with age and experience. Fourth, the evidence shows that the rate of counting depends on the complexity of the reactions involved. When the reactions are complex, as in the use of the number names above "ten," the rate is slow. Finally, evidence has been presented which shows that the application of the active process of counting to perceptual objects, such as letters on a printed page, involves processes other than the mere repetition of the number series.

Later paragraphs in the study from which the foregoing quotations are taken set forth the importance of social psychology in the following terms :

#### NUMBER AS A LATE INTELLECTUAL INVENTION

Social psychology teaches that the number system which is now universally employed by civilized nations is a very late product of human genius. Primitive people had no such number system as that which is expressed in the so-called Arabic numerals. As late as the sixteenth century Europe had nothing but the relatively clumsy system known as the Roman numerals. Before the Roman system was invented, primitive peoples had even less usable schemes for counting and calculating.

#### PRIMITIVE NUMBER SYSTEMS LIMITED

What we know about primitive number systems as revealed through a study of practices among semicivilized peoples of the present day and through an analysis of the history of the number names makes it clear that the first discrimination of things by human minds was limited to the recognition of small groups of objects. At first there were no devices, such as those which number systems supply to modern men, for dealing with groups of things. The precise comprehension of many things and a definition of their number or of the magnitude of any group could not take place without the evolution of complicated devices for enumerating and recording. A striking example of the need of some method and means of thinking with precision is found in the fact that even in our own day the Apache Indians of Arizona keep a record of their ponies by carrying a little sack filled with pebbles, the number of which corresponds to the number of ponies in their drove. If an Indian loses his counters, he is very much confused. He has no other means of determining with exactness the extent of his possessions.

#### NUMBER AND RANGE OF ATTENTION

The fact that the mind must have some device for arranging and recording its experiences of many things is explained by the limitations of human attention. The range of objects which can be recognized in a single field of attention is very limited. An observer can discriminate three or four objects with definiteness, but he becomes confused if he is confronted by a group of twelve or fifteen objects. In order to hold fifteen objects in mind an observer must subdivide the large group or use some other device of simplification. He must also be able to record in some way the various steps which he takes in subdividing the large group.

The race struggled for a long time in solving the problem which was created by the limited attention of the human mind, on the one hand, and by the desire to gain precise knowledge of large groups of possessions, on the other. The Latin word *calculus* means a pebble, and our English derivatives from this word, such as the verb "calculate," furnish philological evidence of the fact that the Romans, like the Apache Indians, helped themselves in gaining precise knowledge of large groups of objects by using pebbles.

## FINGERS AS CONVENIENT TALLIES

The tallies which men of all ages have found most readily accessible as aids in the analysis of large groups of objects are the fingers. Our decimal system and the systems which use 5 or 20 as basal numbers are clear indications that the fingers and toes were early adopted by man as aids to his limited range of attention.

## NUMBER AS A DEVICE FOR ORDERLY THINKING

If we recognize number as an aid to the discriminative recognition and grouping of objects, we shall understand one of the facts which was observed in the experiments with which this chapter opened. It was there discovered that counting is an active process. The observer counts not because the outer world impresses number upon his senses but because he is trying to arrange his experiences in such a way that he can comprehend them. Number is a device to aid thinking; it is an aid to the mind. It is a human invention, not a fact of the natural world.

## PRIMITIVE NUMBER NAMES BASED ON ANALOGIES

In the course of human effort to evolve suitable devices to aid precise thinking in the presence of large groups of objects, a great many experiments have been tried. For example, when men first began to look for devices to aid their thinking, they compared unfamiliar groups with well-known groups. Thus, one writer on primitive number words records the use of the phrase "toes of the ostrich" by a primitive tribe for "four." The primitive people who used this phrase were evidently helping themselves by a form of expression which, fully stated, would be something like this: "I have as many of these as an ostrich has toes." Similar references to familiar objects are found in many languages which use as number names the names of the fingers and hand.

So long as men depended on these analogies or concrete pictures to support their thinking, they could not carry large groups of objects in mind. The range of objects which they could observe with precision was limited to twenty at most. Usually it was limited to ten or even less. We may call the method of counting described the method of using "concrete number."<sup>7</sup>

By similar arguments the study proceeds to describe the evolution of abstract and elaborate number schemes, but enough has been quoted for the purposes of this chapter. The study shows how educational psychology contributes by experimental and historical methods to educational science.

## RESEARCH IN THE FIELD OF METHODS

As a third and final example of scientific methods of study of educational problems, reference may be made to two different methods of teaching beginning reading. One method gives the pupils a story

<sup>7</sup> Charles H. Judd. *Psychological Analysis of the Fundamentals of Arithmetic*. (Supplementary Educational Monograph No. 32.) University of Chicago, 1927.

orally, repeating the whole story again and again before the reading begins. The pupils will come to the use of the book with so complete a knowledge of the words employed that they will commonly skim over the printed words, at first paying little attention to details. It is quite necessary in such a case gradually to bring the pupils to pay more attention to details. The advantage of beginning by the method described is that the pupils have from the first the clear idea that reading is a method of getting meanings; they do not fall into the formalism of mere word uttering that sometimes follows from other methods.

A second method is that of introducing pupils at first to individual words. The next step in this case is to induce them to combine the words into sentences and continuous discourse. This method may be called the method of synthetic reading. It begins with elements and gradually develops the mastery of larger wholes.

Both methods of teaching reading have been successfully employed by teachers. The type of question which it is legitimate to raise can be formulated as follows: Which method is successful with the larger number of pupils? Which method secures results more quickly? Which method stimulates the more extensive use of the art of reading? In securing answers to these questions one must utilize the methods of measuring results to which reference has already been made in earlier paragraphs.

The foregoing illustrations will give a concrete idea of the types of investigations which are being carried on in departments and schools of education. They will also serve, as stated in the beginning, to define, somewhat more explicitly than do the course titles, the contents of courses in administration, educational psychology, and methods of teaching.

Graduate departments of education are engaged in carrying on investigations in all these fields and in formulating the results of their investigations in such a way as to train supervisory officers for schools and also to prepare the content for courses to be administered to teachers-in-training.

#### PURPOSE OF DEPARTMENTS AND SCHOOLS OF EDUCATION

The purpose of the departments and schools of education can be summarized in a single statement: it is to develop a science of education and to apply this science to the work of schools through the training of members of the teaching profession. The variations in organization which have appeared in the development of American

teacher-training institutions are numerous, and they are intelligible only in the light of educational history. It is clear that in recent years these variations in administrative organization are gradually coming to be matters of minor importance in view of the constructive scientific methods which have been evolved, and are producing a substantial body of well-founded knowledge regarding the most productive procedures in schools. The unity of education as a science is eclipsing the accidental variations in institutional organization.

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## CHAPTER VII

### THE SCHOOL OF ENGINEERING

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#### INTRODUCTION: GENERAL CHARACTERISTICS OF ENGINEERING EDUCATION

*Historical position.*<sup>1</sup> Throughout its one hundred years of existence in America engineering education has held consistently to a middle position between the purely cultural disciplines, in which the pursuit of learning and the cultivation of individual gifts are ends in themselves, and the strictly professional disciplines of more Procrustean qualities. It has been the prototype of a growing group of educational processes which blend cultural and technical elements into a distinctive preparation for the major economic functions of society.

Engineering as an art of construction is as ancient as civilization itself. Originally indistinguishable from architecture, it first gained recognition as a distinct professional function in France in the eighteenth century. The first school for instruction in engineering, the *École des Ponts et Chaussées*, was established in Paris in 1748 and was shortly followed by other special technical schools for the training of military engineers and government functionaries. Napoleon gave engineers a conspicuous place in his military and civil projects, and thereby raised the new profession to a place of special prestige in France. He especially fostered the higher technical schools, while allowing the ancient universities of France to fall into a decline. It was due to this circumstance, in no small measure, that engineering education throughout continental Europe came to be accepted as the function of distinct higher institutions, coördinate with the universities but outside their formal jurisdiction, and that the organized profession grew up around these schools as a nucleus.

The civil (that is, civilian, in private rather than government practice) arm of the profession began to emerge in Great Britain

<sup>1</sup> *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 16, 1929.



near the end of the eighteenth century. Its rise was one of the results of the industrial revolution, and its early traditions, still largely influential in the English-speaking world, were colored by the *laissez-faire* philosophy of the period. A group of notably able and resourceful men, recognizing from their own experience the difficulties which young men had to contend with in training themselves for engineering careers and in gaining a well-rounded knowledge of their art, established in 1818 the Institution of Civil Engineers to serve as an agency of mutual education through the exchange of experience. The quasi-official status of the institution was confirmed by royal charter in 1828. The founders of this body became the fountainhead of the tradition, which still persists throughout the British sphere of influence, that practical training under qualified practitioners is the essential basis of professional preparation for engineering, that responsible accomplishment recognized by the professional body is the test of professional standing, and that the scientific training of the schools is essentially an optional and auxiliary process. Pupilage rather than university training became the accepted form of preparation in Great Britain. A professorship of engineering was established in 1849 in King's College, but formal preparation in higher institutions made slow headway and has been largely provided for only during the past forty years.

Engineering education in America, except for the military branches, introduced at West Point, dates from the founding of the Rensselaer Polytechnic Institute<sup>2</sup> at Troy, New York, in 1824. This was a private establishment intended to train teachers of science as applied to agriculture and the industrial arts. Engineering branches were soon added, and in 1835, when the degree of Civil Engineer was first granted, a well-integrated course of engineering studies had been created. These beginnings, owing largely to the educational genius of Amos Eaton, were apparently quite indigenous. There was virtually no engineering profession in America, and neither the Continental nor the British tradition had taken root. The school of applied science, as a distinctive type, arose out of the economic changes which marked the first fifty years of American independence, and in response to a rising demand for improved means of communication and transport, for public works essential to urban living, and for more specialized and refined industrial production.

The early American colleges were still under the sway of traditions brought down from monastic origins and were too far removed from

<sup>2</sup> P. C. Ricketts. *History of Rensselaer Polytechnic Institute, 1824-1894*. John Wiley & Sons, 1895.

the economic current to sense new needs or make any effective response. Science was at their doors, seeking recognition and gaining grudging entrance in the guise of natural philosophy. Science applied to economic ends was an unwelcome alien, to be kept well beyond the academic pale. It remained for "heretical" educators, like Amos Eaton and William Barton Rogers,<sup>3</sup> to break with the standing order and create a new type of education in a setting of its own. Near the middle of the century the pressure of intellectual and social forces began to break down the barriers which had excluded the applied sciences and the concerns of the economic order from the older seats of learning. Both Harvard and Yale established distinct scientific schools in 1847. The spread of state universities, dedicated to social progress equally with pure learning, released new forces. The University of Michigan began pioneer work in engineering education in the then West in 1853. The Morrill Act of 1862<sup>4</sup> laid foundations for the land-grant colleges in the several states to provide for the liberal and professional education of the industrial classes. Columbia opened its School of Mines in 1864, the first American school of the mineral industries. The Massachusetts Institute of Technology began its work in 1865 and introduced the first extensive measures for the laboratory teaching of the sciences in 1869. Cornell University began work in 1867 as "an institution where a man might study any subject." Through these early steps engineering education contributed notably to the establishment of modern educational ideals and methods and to the relating of education to the concerns of economic life, and won for itself a secure and prominent position, both in independent institutions and in the general scheme of university organization.

The development of the engineering college in America has been almost exclusively an educational movement. Unlike the schools of law, medicine, and dentistry, which developed out of and finally displaced a system of pupilage, the engineering colleges have never been largely dominated by practitioners or the professional body. They have been free to develop their educational services on broad lines without being confined to the narrow boundaries of a strictly technical discipline. The engineering profession, as a corporate body, has done little to foster these schools or to define their standards. Engineering remains an open profession, accessible to both self-trained men and to men of formal scientific culture. College training has been accepted

<sup>3</sup> W. B. Rogers. *Objects and Plan of an Institute of Technology*. Committee of Associated Institutions of Science and Arts, 1861.

<sup>4</sup> R. L. Kandel. *Federal Aid for Vocational Education*. *Carnegie Foundation for the Advancement of Teaching*. *Bulletin*, 10, 1917.

as the normal first step to professional standing, but is not in itself ranked as a complete professional preparation.

*Limitations of formal training in engineering.* The engineering profession in America has formulated no explicit policy concerning the recruitment and training of its members. Its guiding traditions, largely inherited from British sources, have been those of an open profession entered through a novitiate of practical experience, to which formal scientific training is a desirable but optional auxiliary. This tradition is maintained in principle but has been modified in practice by a tacit but fairly universal acceptance of college training as a norm. American engineers are fully agreed, however, that preparation for engineering cannot be confined to a formal scholastic process, no matter what its duration or character. Engineering employs a large body of scientific laws, terminology, and tools of analysis which lend themselves admirably to didactic instruction. It makes use of numerous technical arts, some of which, like the examination and interpretation of the microstructure of metals, may be mastered through a special discipline, while others, like the making of steel on a commercial scale, can be mastered only under actual working conditions. The major problems of engineering, such as the development of power and navigation facilities on the St. Lawrence River, for example, hinge more largely on social and economic contingencies than on purely technical considerations. As such they cannot be resolved solely on the basis of a systematic analysis of physical elements or through the application of special skill. Engineering decisions call for judicial qualities, a matured economic sense, a familiarity with the forms and functions of corporate organizations, and first-hand knowledge of human attitudes and relationships. These qualities, which largely mark off the true engineer from the skilled technician, are beyond the scope of any formal scholastic discipline. A large and representative body of engineers, in estimating the qualities most essential to success in engineering, ranked *character, judgment, personal efficiency, and understanding of men* as of greater weight, by a ratio of three to one, than *special knowledge and technique*.<sup>5</sup>

Engineers in general hold to highly realistic educational principles, and consistently advise that formal teaching in advance of responsible experience should be kept largely within the range of the student's personal observation and experience, as extended by rigorous logic and laboratory processes. They deem it impracticable to give a complete professional training in a school and do not expect graduates

<sup>5</sup> C. R. Mann. Study of Engineering Education. *Educational Review*, 53: 11-29, January, 1917.

to be ready to stand alone as qualified practitioners. They prefer to have novices come from the schools young and plastic enough to adjust themselves to subordinate duties and to make their way in competition with more experienced associates who have had less formal training. Engineers advise that college training be limited for the most part to the underlying principles of engineering (its methods of analysis, its verbal, graphical, and symbolic language processes, its setting in contemporary civilization) and to studies pursued for personal culture.<sup>6</sup>

The engineering schools of continental Europe devote considerable effort to teaching the art of engineering in its larger dimensions. They devote much attention to full-scale projects of analysis and design and seek to make the graduate a fairly self-sufficient practitioner. Their professors are themselves eminent practitioners, for the most part, and are able to give their teaching realistic qualities out of their own experience. The American schools are more largely staffed by professional educators, who deem it impracticable to reproduce engineering problems of extended scale, with their inseparable administrative and economic complications, in the artificially simplified setting of a school, and who assume that the more extended problems properly belong to the period of introductory practice.

There is a tacit understanding between educators and practitioners that the latter are obligated to provide training of substantial value for novices under their direction. The organized means for such training, however, are as yet inadequate; no definitions of responsibility have been formulated by agreement between the schools and employers; and the imperfect articulation which exists between the two stages of training is the source of more acute problems than any other aspect of engineering education. Engineering activity is too diverse in its setting and forms of specialization to admit of one general type of novitiate like the internship in medicine. In fact, fundamental conditions are reversed in that the engineer begins with specialization in a subordinate capacity and progresses to duties of a more general character and to a larger measure of independent responsibility. The coöperative plan,<sup>7</sup> based on alternation of college instruction and in-

<sup>6</sup> Opinions of Professional Engineers concerning Educational Policies and Practices. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 13, December, 1927; also in the *Journal of Engineering Education*, N.S. 18: 215-275, December, 1927.

<sup>7</sup> A Study of the Coöperative Method of Engineering Education. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin* 12, May, 1927. Also in the *Journal of Engineering Education*, N.S., 17: 669-735, March, 1927. Also, C. W. Park. Coöperative System of Education. *University of Cincinnati. Studies*, Series 2, Vol. II, Part I, 1925.

dustrial experience at fairly frequent intervals, provides an effective articulation on rudimentary levels but has not been largely extended to the more advanced stages of specialization or administrative responsibility. The better articulation of training in college and after college is, in the writer's judgment, the most critical unsolved problem of engineering education.

### NATURE AND FUNCTION OF ENGINEERING

Seen in this perspective, college training in engineering, and particularly its undergraduate phase, can be ranked not as a full professional discipline but rather as a *professionally oriented type of college course*. Engineering students, as a rule, have passed through no rigorous selective process and have only vaguely formed objectives. Probably half of them will pursue careers in the general activities of industry, commerce, or public affairs which are only nominally professional in quality; but they will derive a direct advantage from engineering backgrounds and engineering habits of analysis and attack. This group becomes differentiated from the professional nucleus in engineering through the opportunities pursued and the tastes developed after leaving college. It is impracticable, therefore, to provide clearly separate types of training for the two groups in college. College requirements are framed as a preliminary shaping for a professional career, but experience indicates that this training is valuable over an extremely wide range of economic activity.

As indicated above, engineering is one of the broader economic functions, comparable to finance, commerce, and agriculture, rather than a sharply definable type of professional service. Engineering is concerned in fairly equal measure with physical technology, with monetary and social economy, and with the organization of human effort in industry and public works. While less exclusively professional than law, medicine, the religious ministry, and other forms of expert individual service, engineering, is more advanced in its professional qualities than commerce, finance, public administration, and other economic functions. Approximately five per cent of the higher personnel of engineering may be classed as professional consultants, and the remainder are largely in industrial and public employ. Engineers have led in introducing elements of professional competency, technique, and ethical accountability into the group activities of great corporate organizations.

Since engineering touches social welfare on its corporate rather than its personal side, and since the individual engineer seldom assumes

sole responsibility for decisions and action which involve personal safety, there is inherently less occasion to restrict engineering practice by public licensure as a measure of social protection. Engineering is traditionally an open profession in which the auxiliary and subordinate ranks serve as a vestibule of recognized professional status. The major professional organizations have a graded scheme of membership, inclusive of all engineering ranks; they are open on substantially equal terms to self-trained men and men of the highest scientific culture; the qualifications for entrance and advancement are based more largely on evidence of experience and responsibility than on formal educational credentials; and the recognition given the individual by the corporate professional body and his colleagues is the primary measure of his professional status. Efforts to restrict the profession and give it a legal status through public licensure have made considerable headway in recent years, but appear to have reached their maximum phase. They have been pitched too low to have any perceptible effect on the educational scheme, and bid fair to remain a secondary factor in the structure of the profession.

Engineering is marked by an immensely ramified scheme of individual specialization, in which the traditional technical divisions of civil, mining, metallurgical, mechanical, and electrical engineering now constitute only the broadest outlines. The pattern has of late become further complicated by a secondary cleavage along functional lines concerned with research, development, design, production, operating supervision, and sales. More than one hundred distinct types of specialization may be identified along technical lines of subdivision. These, in turn, are further subdivided by functions and gradations of responsibility, making, in all, a thousand and more types of individual activity. Furthermore, the pattern is in a state of constant flux. Engineering is too composite in nature to admit of a manageable job analysis. The range of engineering work is probably best indicated as a group of functions in the scheme of social economy. Few of these functions are strictly exclusive, but certain of them which pertain chiefly to engineering may be classed as primary, while others which are shared with other occupational groups may be classed as coördinate :

#### PRIMARY ENGINEERING FUNCTIONS

1. Discovery, development, application, and conservation of natural supplies of energy, materials of construction, and materials used in the industrial arts.
2. Provision for the physical basis of industrial production through structures, machines, and coördinated plants and systems.

3. Provision for public needs through technical constructions and services devoted to sanitation, water supply, power supply, fuel supply, transportation, communication, and the like.

4. Provision for public and private safety as governed by technical conditions.

5. Estimation of economic values and social gains resulting from technical services and constructions; balancing of immediate and ultimate costs for maximum economy.

6. Standardization of technical practices for public convenience, economy, and protection.

7. Advancement and dissemination of engineering knowledge.

#### COÖRDINATE ENGINEERING FUNCTIONS

1. Organization of human effort for technical activities and works.

2. Administrative direction of public and private undertakings based primarily on technical services and constructions.

3. Regulation of technical services and activities in the public interest.

From the nature of these functions it may be inferred that social interest is best served by a wide diffusion of engineering knowledge and a general application of engineering methods rather than by making them the professional monopoly of a legally restricted group, as in medicine. The educational scheme has largely adjusted itself to this conception.

It is essential to a proper understanding of the nature of engineering to recognize that its means are technological but that its ends are economic. The engineer is an economist in a highly concrete sense and seeks *the best ratio of utility to cost that is consistent with safety*. The functions of the engineer and those of the business man are closely related but essentially complementary. The engineer aims at economy of construction, production, and utilization; the business man, at profit from finance, risk-bearing, and distribution. The engineer is more often disposed to stress savings and conservation, and the business man to stress exploitation and promotion. The engineer aims to reduce all uncertainties to a minimum before reaching a decision, and seeks, so far as possible, to be right in every case. His methods are more deliberate than those of the business man, who is often called upon to make quick decisions on intuitive or impressionistic grounds, and who expects to be right in his judgments in only a reasonable margin of cases. In view of these characteristic differences it seems fitting that education for these related functions should be complementary in aim but largely distinct in content and method.

## OBJECTIVES OF ENGINEERING EDUCATION

The broader premises of engineering education have already been outlined. There is no authoritative formulation of the specific objectives, but there is an abundance of data from which these may be inferred. The chief bases of inference are (1) the extent and character of the occupational demand, (2) the personal backgrounds and qualities of engineering students, (3) the careers and opinions of engineering graduates, and (4) the opinions of leading members of the engineering profession.

*The occupational demand.* Since engineering is not primarily a form of personal service to individuals, as are medicine and dentistry, the occupational demand cannot be specified by any normal ratio, to the population at large, of practitioners or of candidates in preparation. Inferences as to the occupational quota to be supplied by educational institutions must be drawn from partial data and are subject to complex influences. Hence only rough approximations may be made.

## DATA FOR THE ESTIMATION OF OCCUPATIONAL DEMAND

|   | APPROXIMATE<br>TOTALS |
|---|-----------------------|
| Professional groups   |                       |
| Membership of four major engineering societies. . . . .   | 60,000                |
| Estimated number of engineers of all ranks . . . . .  | 125,000               |
| Estimated number of auxiliary technicians . . . . .   | 125,000               |
| Industrial groups   |                       |
| Persons employed in manufacturing, mechanical, mineral, and transport industries (1920) . . . . .   | 17,000,000            |
| Technical and administrative personnel of the above industrial groups, to be recruited principally from educational sources . . . . .               | 750,000               |
| Annual quota of recruitment to maintain said technical and administrative personnel; replacements 3.5 per cent and increment 2.5 per cent . . . . . | 45,000                |
| Men supplied by engineering schools per annum   |                       |
| Graduates of engineering colleges . . . . .   | 9,000                 |
| Graduates of non-collegiate schools . . . . .   | 1,000                 |
| Non-graduates with two years or more of technical education . . . . .   | 4,000                 |

If the same ratio of recruitment is applied to the professional groups as to the industrial groups, or 6 per cent per annum, it appears that a close balance now obtains between demand from this source and the supply of graduates. The industrial groups, however, are only partially coincident with the professional groups and make a considerable additional demand. It is apparent that the potential absorbing power of industry, to supply all its technical and higher supervisory ranks, is



far in excess of the present supply from all the sources indicated. Detailed studies of personnel in six representative industries<sup>8</sup> indicate that about one quarter of the positions classified above as technical and administrative are now filled by men with either complete or partial college training, and that four fifths of this college group received training of a technical nature. Approximately half of the technical and administrative positions are of such type and grade that college men are attracted to them in fair or considerable numbers; the other half are less effectively provided for by the present educational programs.

It seems plain that the longer and more elaborate types of technical education need to be extended only moderately to keep pace with industrial and professional demand. A much greater expansion would be justified in the realm of a briefer and more direct technical training which is better adapted to supply the half or more of the industrial demand which has not in the past largely attracted college men. There are many indications that the present engineering colleges serve industry more effectively on the side of its expert staff functions than on the side of the line duties of supervision of operations. The latter type of need could probably be met better through a more direct and intensive type of training. The immediate problem of the colleges appears to be the advancement of the quality of their training rather than any considerable increase of its extent.

The failure to provide adequately for briefer and more direct types of technical education and the tendency to concentrate all facilities in schools and programs of a definitely collegiate type stand out as the most striking contrast between the American situation and that elsewhere in the modern industrial world. These differences are apparently due, first, to easier economic conditions which result in a slower maturing of career purposes and afford American youth an unrestricted choice of locations and activities, and, second, to the national policy of making "higher" education accessible to all classes in society and adjusting its quality to a popular level. The European organization of technical education on three distinct levels, intended to prepare respectively (1) skilled artisans, (2) foremen and technicians, and

<sup>8</sup> National Industrial Conference Board. Summary reports on

Technical Education and the Chemical Industries. 1925.

Technical Education and the Electrical Manufacturing Industry. 1925.

Technical Education and the Metal Trades Industries. 1925.

Technical Education and the Paper and Pulp Industry. 1924.

Technical Education and the Rubber Industry. 1924.

Technical Education and the Textile Industry. 1925.

(3) professional engineers, chemists, and architects, accords with a social stratification which has no counterpart in America, where briefer and more direct types of technical education must gain acceptance on the ground that they are better fitted to certain types of young men, are within reach of larger economic groups, and meet certain types of industrial needs to better advantage. This is a problem which deserves far more extended study than it has received at the hands of American educators.

*Student backgrounds.* A group of studies of entering students conducted in the fall of 1924 by the coöperation of thirty-two engineering colleges affords much significant data.<sup>9</sup> The institutions included are adequately representative as to type and location. The total number of entrants reported upon was 4079, or approximately 20 per cent of the entire number admitted to the engineering colleges of the United States at that period.

#### SUMMARY OF DATA CONCERNING ENTERING STUDENTS, 1924

##### Age, birthplace, and parentage

|                                    |               |
|------------------------------------|---------------|
| Median age of students . . . . .   | 18.9 years    |
| Native-born students . . . . .     | 96.2 per cent |
| Native-born grandparents . . . . . | 60.7 per cent |

##### Geographical origins

|   |               |
|---|---------------|
| Median distance, home to college . . . . .        | 107 miles     |
| Students who do or could live at home . . . . .   | 24.8 per cent |
| Students from within the state . . . . .          | 83.7 per cent |
| Students from foreign countries . . . . .         | 1.2 per cent  |
| Students of rural origin . . . . .                | 15.0 per cent |
| Students from villages and small cities . . . . . | 24.2 per cent |
| Students from cities of more than 5000 . . . . .  | 60.8 per cent |

##### Fathers' occupations and positions

|                                    |               |
|------------------------------------|---------------|
| Industrial . . . . .               | 29.4 per cent |
| Mercantile or financial . . . . .  | 22.4 per cent |
| Agricultural . . . . .             | 17.1 per cent |
| Professional . . . . .             | 15.8 per cent |
| Miscellaneous occupations. . . . . | 15.4 per cent |
| Owner or proprietor . . . . .      | 42.5 per cent |
| Executive or supervisor . . . . .  | 28.2 per cent |
| Workmen, clerks, etc. . . . .      | 19.2 per cent |
| Engineers . . . . .                | 4.0 per cent  |
| Teachers . . . . .                 | 1.6 per cent  |
| Others . . . . .                   | 4.5 per cent  |

<sup>9</sup> A Study of Engineering Students at the Time of Entrance to College. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 1, September, 1926; also in the *Journal of Engineering Education*, N.S., 17: 83-114, September, 1926.

## Fathers' education

|   |               |
|---|---------------|
| College or professional degree . . . . .    | 12.9 per cent |
| Attended college, nongraduate . . . . .     | 10.8 per cent |
| High-school graduate . . . . .              | 16.0 per cent |
| Attended high school, nongraduate . . . . . | 15.0 per cent |
| Grammar-school graduate . . . . .           | 26.9 per cent |
| All others . . . . .                        | 18.4 per cent |

## Scholastic origins of students

|   |               |
|---|---------------|
| Graduates of public high schools . . . . .                | 85.8 per cent |
| From private and parochial schools . . . . .              | 9.3 per cent  |
| College transfers, including graduates . . . . .          | 15.1 per cent |
| Honor group in secondary school (highest tenth) . . . . . | 18.0 per cent |
| Total from upper third of preparatory class . . . . .     | 60.6 per cent |
| Total from middle third . . . . .                         | 36.9 per cent |
| Total from lowest third . . . . .                         | 2.6 per cent  |
| Students admitted with entrance conditions . . . . .      | 19.6 per cent |

## Decision to study engineering formed

|  |               |
|--|---------------|
| Before last year of secondary school . . . . .   | 50.2 per cent |
| During last year of secondary school . . . . .   | 26.7 per cent |
| After graduation from secondary school . . . . .   | 23.1 per cent |
| On the advice of parents . . . . .   | 13.6 per cent |
| On the advice of teachers . . . . .  | 4.8 per cent  |
| On the advice of friends . . . . .   | 8.5 per cent  |
| On the basis of impressions and associations formed through work done . . . . .              | 19.2 per cent |
| On the basis of supposed aptitude for engineering . . . . .                                  | 31.0 per cent |
| On the basis of definite appeal of engineering work . . . . .                                | 50.9 per cent |
| To be able to earn a good living . . . . .   | 26.6 per cent |
| On the ground that engineering training is good preparation for many lines of work . . . . . | 23.6 per cent |

## Students' conception of engineering as tested early in the freshman year

|                          |               |
|--------------------------|---------------|
| Little or none . . . . . | 18.7 per cent |
| Poor . . . . .           | 37.9 per cent |
| Good . . . . .           | 30.5 per cent |
| Excellent . . . . .      | 12.9 per cent |

Most of the students entering the engineering colleges in general are drawn from readily assimilable social groups and have relatively modest economic, cultural, and educational backgrounds. In general they represent groups in which college training and entrance into a professional field of work are tangible evidences of social and economic advancement. As a rule they represent a superior selection of scholastic ability and have generally made good records in preparatory subjects which indicate aptitude for scientific and technical studies, such as mathematics, sciences, and drawing. Their educational choices are

made early and are based more often on inclinations and suppositions than upon well-informed counsel. It is impossible to regard these students as scholarly amateurs, bent upon the pursuit of learning as an end in itself, or as mature candidates for a deliberately chosen profession. The impetus to enter a technological career comes early rather than late in adolescence and seeks a try-out, either through an educational program directly adapted to that end or through actual experience. The actual results of delaying entrance to engineering studies, by requiring two years or more of pre-engineering studies in an arts college, have been seriously disappointing.<sup>10</sup> Apparently the spark of interest is quenched more often than it is kindled by such a prescription, resulting in marked decline in engineering enrollments without evidence of marked compensatory gains. It is significant that throughout the modern world the normal age of entrance to technological programs of study lies in the range from seventeen to nineteen years. The European student begins his technological studies with the advantage of a more thorough and extended secondary education, but the age level and stage of mental maturity appear to be the significant threshold rather than any definite level of scholastic attainment.

Under American conditions the objectives of engineering education necessarily include the try-out and refinement of occupational choices, a discipline in intensive and systematic methods of mental work not afforded by a scheme of secondary education adjusted to a popular level, a considerable measure of cultural up-grading, and the social readjustments incidental to the transition from modest home backgrounds to the setting of modern professional and industrial life, in addition to the technical preparation for engineering as such.

*The careers and opinions of engineering graduates.* Studies of the careers of engineering graduates tend to confirm the general nature of the purposes of engineering education, as well as its specific professional qualities. The following facts, based on returns from nearly 6300 graduates of forty-three institutions, or 40 per cent of the entire group of classes canvassed, are doubtless fully representative: <sup>11</sup>

<sup>10</sup> Second Report of the Board of Investigation and Coördination presented at the Thirty-fifth Annual Meeting of the Society for the Promotion of Engineering Education. *Journal of Engineering Education*, N.S., 18: 37-56, September, 1927.

<sup>11</sup> A Study of Engineering Graduates and Nongraduate Former Students. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 3, October, 1926; also in the *Journal of Engineering Education*, N.S., 17: 176, October, 1926.

## GENERAL TYPES OF ACTIVITY OF ENGINEERING GRADUATES

| YEARS AFTER GRADUATION | PERCENTAGES ENGAGED IN FORMS OF ACTIVITY |                |       |               |
|------------------------|--|----------------|-------|---------------|
|                        | Primarily Technical                      | Administrative | Sales | Miscellaneous |
| 0.5 to 2.5             | 71.1                                     | 9.5            | 6.7   | 12.7          |
| 5                      | 43.1                                     | 35.5           | 13.9  | 7.5           |
| 10                     | 30.7                                     | 54.6           | 11.3  | 3.4           |
| 15 and more            | 30.3                                     | 60.8           | 5.6   | 2.3           |

These figures show that graduates normally begin their careers in subordinate forms of technical, manual, and clerical work, and that the first ten years are a period of differentiation between those whose future lies along lines of the advanced technical specialties of engineering and those who are drawn to more general administrative duties. The group engaged in consulting-engineering service increases from 2.2 per cent among the younger graduates to 8.6 per cent among those of fifteen years and more. The proportion engaged in the more individual forms of professional activity is greatest among the older graduates, including about one fifth of those more than thirty years out of college.

The same group of graduates from whom the above data were obtained were canvassed concerning the relationship of their field of work to the course of study pursued in college, with the following results:

## WORK OF ENGINEERING GRADUATES AS RELATED TO COLLEGE COURSES

| DIVISION OF ENGINEERING | PER CENT in ENGINEERING WORK |                    |              | PER CENT NOT IN ENGINEERING |
|-------------------------|------------------------------|--------------------|--------------|-----------------------------|
|                         | Same as Course               | Closely Associated | Unassociated |                             |
| Civil . . . . .         | 74.6                         | 3.8                | 10.0         | 11.6                        |
| Mining . . . . .        | 50.6                         | 14.8               | 18.4         | 16.2                        |
| Mechanical . . . . .    | 52.3                         | 9.9                | 22.3         | 15.5                        |
| Electrical . . . . .    | 65.0                         | 5.6                | 14.5         | 14.9                        |
| Chemical . . . . .      | 49.9                         | 11.2               | 18.4         | 20.5                        |
| Weighted average .      | 61.8                         | 7.4                | 16.0         | 14.8                        |

In general the migration of graduates away from the field of college training is greatest among the older groups.

The estimates of the general effectiveness of engineering education made by graduates afford an interesting check on its objectives: <sup>12</sup>

<sup>12</sup> A Study of Engineering Graduates and Nongraduate Former Students. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 3, October, 1926; also in the *Journal of Engineering Education*, N.S., 17: 183, October, 1926.

ESTIMATES OF THE EFFECTIVENESS OF ENGINEERING COURSES  
BY GRADUATES

| ITEM RATED   | EXCEL-<br>LENT  | GOOD            | PASS-<br>ABLE   | POOR            | VERY<br>POOR    | WEIGHTED<br>SCORE |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|
|  | <i>Per Cent</i> | <i>Per Cent</i> | <i>Per Cent</i> | <i>Per Cent</i> | <i>Per Cent</i> | <i>Per Cent</i>   |
| Technical and scientific preparation . . . . .                   | 33.9            | 42.7            | 20.1            | 2.2             | 1.1             | 76.6              |
| Relation of studies to problems and procedures of practice . . . | 15.4            | 55.9            | 22.3            | 5.6             | 0.8             | 69.9              |
| Relation of standards to requirements of practice . . . . .      | 10.2            | 56.4            | 27.9            | 5.2             | 0.3             | 67.8              |

The last column of the above shows the weighted scores. These scores are based arbitrarily on a value of 4 for excellent, 3 for good, 2 for passable, 1 for poor, and 0 for very poor, 4 being used as a base. These per cents of the estimates give technical and scientific preparation a place of greater importance than the other two items.

RATINGS OF GRADUATES ON THE VALUE OF COLLEGE EXPERIENCES

| ITEM RATED                                       | VERY<br>GREAT   | GREAT           | MODER-<br>ATE   | LITTLE          | NONE            | WEIGHTED<br>SCORE |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|
|  | <i>Per Cent</i> | <i>Per Cent</i> | <i>Per Cent</i> | <i>Per Cent</i> | <i>Per Cent</i> | <i>Per Cent</i>   |
| Knowledge of fundamental principles of science.  | 29.9            | 42.8            | 25.0            | 2.2             | 0.1             | 75.0              |
| Methods of thinking and habits of work . . . .   | 32.3            | 38.7            | 24.4            | 3.8             | 0.8             | 74.4              |
| Development from college life and atmosphere . . | 21.7            | 36.4            | 29.5            | 9.6             | 2.8             | 66.1              |
| Direct training in engineering . . . . .         | 11.1            | 31.9            | 43.6            | 11.4            | 2.0             | 59.6              |
| Basis of a liberal education . . . . .           | 12.8            | 29.3            | 37.8            | 17.2            | 2.9             | 57.9              |
| Associations with fellow students . . . . .      | 15.2            | 27.3            | 34.2            | 18.9            | 4.4             | 57.5              |
| Inspiration and guidance from faculty . . . . .  | 14.0            | 25.7            | 33.2            | 20.9            | 6.2             | 55.1              |
| Training in technical craftsmanship . . . . .    | 9.1             | 24.6            | 41.7            | 21.1            | 3.5             | 53.6              |

The weighted scores give a value of 4 to very great, 3 to great, 2 to moderate, 1 to little, and 0 to none, using 4 as a base.

OPINIONS OF GRADUATES AS TO QUALITIES DEVELOPED BY  
ENGINEERING EDUCATION

| QUALITIES                             | GREAT           | MODERATE        | LITTLE          | WEIGHTED<br>SCORE |
|---------------------------------------|-----------------|-----------------|-----------------|-------------------|
|                                       | <i>Per Cent</i> | <i>Per Cent</i> | <i>Per Cent</i> | <i>Per Cent</i>   |
| Accuracy and thoroughness . . . . .   | 79.0            | 19.5            | 1.5             | 92.5              |
| Diligence . . . . .                   | 38.6            | 50.5            | 10.9            | 75.9              |
| Integrity and dependability . . . . . | 41.8            | 41.9            | 16.3            | 75.2              |
| Initiative and originality . . . . .  | 36.6            | 44.1            | 19.3            | 72.4              |
| Qualities of leadership . . . . .     | 19.4            | 40.2            | 40.4            | 59.6              |

Weighted scores are based on a value of 3 for great, 2 for moderate, and 1 for little, 3 being used as a base.

The opinions of graduates as to the proper objectives of engineering courses were expressed as follows: <sup>13</sup>

|  | PER CENT |
|--|----------|
| To train broadly for the general needs of industry . . . . .   | 20.6     |
| To train for the specific needs of specialized divisions of engineering practices . . . . .              | 11.9     |
| To provide the former type of training for the majority and the latter for those who desire it . . . . . | 67.5     |

*Opinions of leading engineers.* The professional body of engineers in America has no unified corporate organization and policy. Its attitude toward the recruitment and preparation of its future members has never been officially formulated, but must be inferred from the traditions of the profession and the opinions expressed by its individual members. Recent inquiries conducted by five national engineering societies supply a large amount of orderly data for these purposes.<sup>14</sup> These inquiries make it evident that the engineers regard their profession as an open one, accessible to both self-educated men and men of formal scientific culture; that they conceive engineering as a broad function in social economy, with professional, auxiliary, and subordinate groups of personnel included in one comprehensive body; that they regard engineering education as properly including a variety of programs and institutions ranging in character from the vocational to the professional; and that college training is accepted as the normal first step to professional recognition.

<sup>13</sup> Engineering Graduates and Nongraduates. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 3, October, 1926; also in the *Journal of Engineering Education*, N.S., 17: 185, October, 1926.

<sup>14</sup> Opinions of Professional Engineers concerning Educational Policies and Practices. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 13, December, 1927; also in the *Journal of Engineering Education*, N.S., 18: 215, December 1927.

Engineers recognize that the undergraduate phase of college training is necessarily quite general in its objectives. They advise that the principal curricula should not aim at individual specialization but should be differentiated from one another only to the degree sufficient to assure concentration on a logically related core of subject matter and to focus the student's efforts in one of the major engineering fields. Actual specialization, in their view, should be postponed until after the undergraduate period, and should be undertaken by a selected minority in the graduate school and by the majority in connection with their introductory experience.

#### DEGREE OF DIFFERENTIATION OF CURRICULA FAVORED BY LEADING ENGINEERS

|   |                       |
|---|-----------------------|
| Favoring "broad, general course" . . . . .  | 169, or 16.0 per cent |
| Favoring slight differentiation . . . . .   | 338, or 31.9 per cent |
| Favoring moderate differentiation . . . . . | 365, or 34.5 per cent |
| Favoring sharp differentiation . . . . .    | 106, or 10.0 per cent |
| Noncommittal . . . . .                      | 80, or 7.6 per cent   |

They favor curricula built up on broad lines from humanistic, scientific, and technological materials of a basic character, and would provide a self-contained program which the majority may enter under definite engineering auspices, direct from the secondary schools. Encouragement is offered to those who wish to extend the range of humanistic studies in a college of arts before entering upon the engineering program, but there is little support for prescriptive measures of this nature.

These engineers recommend that the specific engineering subjects should serve primarily as means of introducing the student to engineering principles and methods rather than as preparation for particular types of work. The opinions of the five groups are summarized below :

#### PURPOSE OF SPECIFIC ENGINEERING SUBJECTS

| GROUPS                         | TO TEACH ENGINEERING PRINCIPLES AND METHODS | TO PREPARE FOR PARTICULAR FIELDS OF WORK | APPROXIMATE RATIO |
|--------------------------------|---|--|-------------------|
|                                | <i>Per Cent</i>                             | <i>Per Cent</i>                          |                   |
| Chemical engineers . . . . .   | 92.8  | 4.3                                      | 22 : 1            |
| Civil engineers . . . . .      | 87.1  | 5.2                                      | 17 : 1            |
| Electrical engineers . . . . . | 88.2  | 6.3                                      | 14 : 1            |
| Mechanical engineers . . . . . | 68.7  | 12.6                                     | 5 : 1             |
| Mining engineers . . . . .     | 65.7  | 21.7                                     | 3 : 1             |



While all five groups are agreed in principle, it would seem that the mining engineers in particular, and the mechanical engineers to a lesser degree, attach relatively higher importance than other groups to the direct technical training afforded by the specific engineering subjects.

Engineers recognize the growing importance of functional lines of organization in engineering activity, such as research, design, construction, production, sales operation, and management, and see merit in a scheme of curricula which conforms to these lines. They are favorable to the experimental trial of such a plan, with a provision of two types of training in the fundamental subjects of the early years, one profoundly technical and one moderately technical, and with the provision in the later years of extended and rigorous treatment of engineering subjects for men with the more profound preparation who aim at the highly technical functions, and of less extended technical treatment with larger emphasis on the nontechnical features of engineering subjects for men of other groups.

The opinions of the engineers consulted indicate that the economic aspects of engineering deserve coordinate emphasis with its technical aspects. Few would provide for more than introductory study in the department of political economy or in a special department devoted to the economics of engineering, but many advise greater emphasis on economic phases of the engineering subjects proper. They also advise that engineering students should be given some introduction to the problems of administration and management, but that no attempt should be made to give specific training for executive positions.

An examination of the criticisms of engineering education made by engineers and industrialists throws light on the problem of objectives. The point most frequently and strongly commented upon is that of failure to master fundamental scientific principles with sufficient thoroughness. Second is the frequent failure to acquire fluency in written and spoken English. Third is an inadequate breadth of view and vigor of imagination. Deficiencies of special knowledge or technique are infrequently emphasized.

*Summary of objectives.* Stated in general terms, the following are the aims and functions of engineering education :

1. To attract young men of suitable gifts to a technological career and to afford a trial of aptitude and interest while the way is still open to a readjustment of educational program.
2. To provide a discipline in the work habits, analytical processes, and skills which are characteristic of engineering.
3. To provide a grounding in the humanistic, scientific, and tech-

nological branches of knowledge which underlie the engineering function in society.

4. To create insight into engineering functions and responsibilities and to arouse a sense of professional solidarity and obligation.

5. To awaken interest, develop resourcefulness, give access to source materials, and develop capacity for self-direction and self-criticism as a preparation for self-education in later life.

6. To facilitate the personal adjustments which mark the transition from the social and economic sphere of the childhood home to that of the adult career.

7. For limited and selected groups, to provide special training in particular branches of engineering technique and research.

The specific objectives which govern the detailed teaching processes may be analyzed into five groups as follows :

#### I. Mental processes, tools of analysis and communication, and related skills

Visualization of ideas

Word images

Spatial visualization in two and three dimensions

Communication of ideas

Verbal, in speech and writing, largely expository

Symbolic, as in mathematics and chemistry

Graphic, by drawings, diagrams, charts, etc.

Theory, notation, and transformations of quantitative relations

Arithmetical

Algebraic

Geometrical

Functional

Differential

Integral

} Ability to apply for analysis and computation to geometrical, physical, and statistical situations not originally stated in symbolic form

Understanding of and skill in chemical, physical, geometrical, and topographical measurements of common occurrence

#### II. Scientific and philosophical groundwork of engineering

Concepts, relations, properties, and notation of

Chemistry

Physics

Geology

Economics

Logic of inductive and deductive operations

#### III. Scientific bases of engineering technology

Mechanics of force, work, motion, elasticity, materials, and liquids

Thermodynamics, chemistry, and energetics of gases, vapors, and combustion

Electrostatics and electrodynamics

Science of metals and earth products

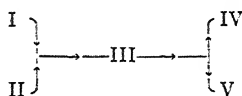
## IV. Technical arts of engineering

Topographical and hydrographic measurements, maps, and charts  
 Design of fixed structures and containers  
 Design of machines, tools, and instruments  
 Design of coördinated systems of structures and machines  
 Extraction of mineral products  
 Industrial operations relating to the preparation of engineering materials, fabrication of parts, assemblies and erections, refinement of mineral products, etc.  
 Power production, transmission, and application  
 Communication by electrical and mechanical means  
 Transportation by land, air, and water  
 Water supply and waste disposal  
 And other branches, indefinitely

## V. Organization of economic effort

Industrial organization  
 Accounting and cost analysis  
 Production control  
 Industrial relations

Using the Roman numerals in the above scheme of analysis as symbols, the progression of the educational process is schematically



Items I, II, and III make up three quarters or more of the undergraduate program. Items IV and V are introduced in the undergraduate period but are carried over largely into the after-college period of training.

## ENTRANCE REQUIREMENTS

*Present practices.* All but four of the more than one hundred and sixty colleges of engineering in the United States and Canada admit students directly from the secondary schools. Columbia and Dartmouth each require three years, and Pennsylvania two years, of pre-engineering work in arts and sciences, while Yale maintains a common freshman year for students of both arts and engineering as a distinct administrative unit. Practically all engineering colleges admit graduates and transfers from non-engineering colleges to advanced standing; many of them encourage this mode of preparation as a voluntary measure, and a number have definitely coördinated programs in

coöperation with arts colleges for those who wish a more extended training. The engineering colleges in general are strongly opposed to any prescriptive plan for a pre-engineering program as a prerequisite to admission.

A large-scale sampling of admissions in the fall of 1924 showed the following distribution of origins: <sup>15</sup>

| Admissions to freshman class:                             | PER CENT |
|---|----------|
| From public high schools . . . . .                        | 87.2     |
| From parochial high schools . . . . .                     | 2.4      |
| From private preparatory schools . . . . .                | 7.0      |
| From private tutoring . . . . .                           | 0.3      |
| From other colleges, without advanced standing . . . . .  | 3.0      |
| Admissions to advanced standing, ratio to total . . . . . | 12.1     |

The admissions to advanced standing included both those from arts colleges and from other engineering colleges.

All but seven institutions in the United States which admit engineering freshmen, base their admissions normally on credentials from accredited secondary schools. In a number of cases a special recommendation from the principal or a standing above the minimum for graduation is also required. The Canadian institutions generally base admission on matriculation examinations set by the provincial authorities and require "honors" standing in mathematics. The majority of American colleges give entrance examinations to candidates from other than accredited schools. Practically all institutions admit students to advanced standing upon the basis of a transcript of the scholastic record, evidence of good standing or honorable dismissal, and an appraisal of the merits of the individual case by the dean or a committee on admissions. In a number of institutions admission by transfer is restricted to students with superior records.

The formal requirements for admission to engineering colleges in the United States are summarized in the following table, which is based on more than three quarters of the degree-granting institutions: <sup>16</sup>

<sup>15</sup> A Study of Engineering Students at the Time of Entrance to College. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 1, September, 1926; also in the *Journal of Engineering Education*, N.S., 17: 112, September, 1926.

<sup>16</sup> A Study of Admissions and Eliminations of Engineering Students. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 2, September, 1926; also in the *Journal of Engineering Education*, N.S., 17: 136, September, 1926.

# ANALYSIS OF REQUIREMENTS FOR ADMISSION TO ENGINEERING COURSES IN THE UNITED STATES

| TYPE OF INSTITUTION                                | NUMBER OF EACH TYPE | NUMBER OF UNITS IN DEFINITELY SPECIFIED SUBJECTS |     |       |       | NUMBER OF UNITS SPECIFIED IN MATHEMATICS |       |       |       | NUMBER REQUIRING |       | NUMBER OF UNITS SPECIFIED IN ENGLISH |       |       | FOREIGN LANGUAGE |        | SPECIFIED UNITS IN SCIENCE |         |         | ENTRANCE CONDITIONS |         |                |              |          |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|--|---------------------|--|-----|-------|-------|--|-------|-------|-------|------------------|-------|--------------------------------------|-------|-------|------------------|--------|----------------------------|---------|---------|---------------------|---------|----------------|--------------|----------|--------------|-------|---------|-----------|-----------|---------------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|  |                     | 0-7  |     |       |       | 8-15                                     |       |       |       | 16-24            |       |                                      |       | 25-33 |                  |        |                            | 34-40   |         |                     |         | Plane Geometry | Trigonometry | Required | Not Required | Total | Physics | Chemistry | Permitted | Not Permitted | Statement |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|  |                     | 7-9  |     |       |       | 10-15                                    |       |       |       | 16-24            |       |                                      |       | 25-33 |                  |        |                            | 34-40   |         |                     |         |                |              |          |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|  |                     | 0-7  | 7-9 | 10-15 | 16-24 | 25-33                                    | 34-40 | 41-47 | 48-54 | 55-61            | 62-68 | 69-75                                | 76-82 | 83-89 | 90-96            | 97-103 | 104-110                    | 111-117 | 118-124 | 125-131             | 132-138 |                |              |          |              |       |         |           |           |               |           | 139-145 | 146-152 | 153-159 | 160-166 | 167-173 | 174-180 | 181-187 | 188-194 | 195-201 | 202-208 | 209-215 | 216-222 | 223-229 | 230-236 | 237-243 | 244-250 | 251-257 | 258-264 | 265-271 | 272-278 | 279-285 | 286-292 | 293-299 | 300-306 | 307-313 | 314-320 | 321-327 | 328-334 | 335-341 | 342-348 | 349-355 | 356-362 | 363-369 | 370-376 | 377-383 | 384-390 | 391-397 | 398-404 | 405-411 | 412-418 | 419-425 | 426-432 | 433-439 | 440-446 | 447-453 | 454-460 | 461-467 | 468-474 | 475-481 | 482-488 | 489-495 | 496-502 | 503-509 | 510-516 | 517-523 | 524-530 | 531-537 | 538-544 | 545-551 | 552-558 | 559-565 | 566-572 | 573-579 | 580-586 | 587-593 | 594-600 | 601-607 | 608-614 | 615-621 | 622-628 | 629-635 | 636-642 | 643-649 | 650-656 | 657-663 | 664-670 | 671-677 | 678-684 | 685-691 | 692-698 | 699-705 | 706-712 | 713-719 | 720-726 | 727-733 | 734-740 | 741-747 | 748-754 | 755-761 | 762-768 | 769-775 | 776-782 | 783-789 | 790-796 | 797-803 | 804-810 | 811-817 | 818-824 | 825-831 | 832-838 | 839-845 | 846-852 | 853-859 | 860-866 | 867-873 | 874-880 | 881-887 | 888-894 | 895-901 | 902-908 | 909-915 |
| State universities . . . . .                       | 38                  | 16   | 9   | 13    | 7     | 4  | 23    | 1     | 3     | 4                | 24    | 4                                    | 1     | 36    | 1                | 15     | 23                         | 15      | 18      | 5                   | 10      | 8              | 7            |          |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Land-grant colleges . . . . .                      | 20                  | 8  | 11  | 1     | 3     | 4  | 10    |       |       | 9                | 9     |                                      |       | 20    |                  | 3      | 17                         | 10      | 10      | 3                   | 10      | 6              | 4            |          |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Other state institutions . . . . .                 | 6                   | 2  | 3   | 1     | 7     | 4  | 1     |       |       | 6                | 6     |                                      |       | 6     |                  | 2      | 4                          | 3       | 2       | 1                   | 4       | 1              | 1            |          |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Privately endowed arts colleges . . . . .          | 7                   | 1  | 5   | 1     | 3     | 4  | 1     |       |       | 2                | 2     |                                      |       | 1     |                  | 6      | 6                          | 1       | 3       | 1                   | 1       | 3              | 1            |          |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Privately endowed universities . . . . .           | 26                  | 5  | 8   | 13    | 4     | 1  | 10    | 5     | 3     | 15               | 7     |                                      |       | 25    | 1                | 17     | 9                          | 9       | 13      | 4                   | 7       | 3              | 11           |          |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Privately endowed polytechnic institutes . . . . . | 9                   | 3  | 3   | 6     | 1     | 2  | 3     | 2     | 3     | 8                | 4     |                                      |       | 9     |                  | 8      | 1                          | 5       | 4       | 5                   | 5       | 1              | 3            |          |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Municipal institutions . . . . .                   | 2                   | 1  | 2   | 1     | 1     | 1  | 1     |       |       | 2                | 2     |                                      |       | 2     |                  | 1      | 1                          | 1       | 1       | 1                   | 1       | 1              | 2            |          |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Military colleges . . . . .                        | 3                   | 1  | 2   | 1     | 1     | 2  |       |       |       | 1                |       |                                      |       | 1     |                  | 1      | 2                          | 1       |         |                     |         |                |              |          |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Totals . . . . .                                   | 111                 | 32   | 41  | 31    | 19    | 25                                       | 52    | 10    | 9     | 67               | 15    | 3                                    | 106   | 2     | 53               | 58     | 43                         | 53      | 15      | 29                  | 11      | 58             | 21           | 32       |              |       |         |           |           |               |           |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |

Total number of units required for admission:

14 units required by 1 institution

14½ units required by 5 institutions

15 units required by 102 institutions

16 units required by 3 institutions

| LOCATION OF INSTITUTION                | NUMBER OF EACH TYPE | NUMBER OF UNITS IN DEFINITELY SPECIFIED SUBJECTS |    |     |       | NUMBER OF UNITS SPECIFIED IN MATHEMATICS |     |   |    | NUMBER REQUIRING |                |                    | NUMBER OF UNITS SPECIFIED IN ENGLISH |   |    | FOREIGN LANGUAGE |              | SPECIFIED UNITS IN SCIENCE |         |           | ENTRANCE CONDITIONS |               |
|--|---------------------|--|----|-----|-------|--|-----|---|----|------------------|----------------|--------------------|--------------------------------------|---|----|------------------|--------------|----------------------------|---------|-----------|---------------------|---------------|
|  |                     | 0-7  |    | 7-9 | 10-15 | 0-2                                      | 2-4 | 3 | 3+ | 4                | Solid Geometry | Plane Trigonometry | 2                                    | 3 | 4  | Required         | Not Required | Total                      | Physics | Chemistry | Permitted           | Not Permitted |
|  |                     | 0-7  |    | 7-9 | 10-15 | 0-2                                      | 2-4 | 3 | 3+ | 4                |                |                    |                                      |   |    |                  |              |                            |         |           |                     |               |
|  |                     | 0-7  |    | 7-9 | 10-15 | 0-2                                      | 2-4 | 3 | 3+ | 4                |                |                    |                                      |   |    |                  |              |                            |         |           |                     |               |
| New England and Middle Atlantic States | 36                  | 1  | 11 | 24  | 4     | 4  | 12  | 9 | 7  | 27               | 12             |                    | 37                                   |   | 30 | 7                | 9            | 21                         | 6       | 16        | 4                   |               |
| Southern States                        | 22                  | 10   | 10 | 2   | 3     | 9  | 8   | 1 | 1  | 6                | 1              | 1                  | 19                                   | 1 | 3  | 18               | 15           | 6                          | 1       | 2         | 9                   | 7             |
| Middle Western States                  | 32                  | 16   | 11 | 5   | 4     | 7  | 21  |   |    | 23               |                |                    | 33                                   |   | 11 | 22               | 12           | 17                         | 3       | 11        | 2                   | 21            |
| Rocky Mountain States                  | 13                  | 4  | 4  | 4   | 5     | 5  | 8   |   |    | 8                |                |                    | 12                                   |   | 5  | 7                | 4            | 5                          | 4       | 6         | 1                   | 9             |
| Pacific Coast States                   | 8                   | 3  | 5  | 3   | 1     | 3  | 1   |   |    | 3                | 2              | 2                  | 5                                    | 1 | 4  | 4                | 4            | 3                          | 4       | 1         | 2                   | 3             |

The table gives a somewhat incomplete picture of the situation as to prescribed units. Nearly 70 per cent of the engineering colleges prescribe work in the social-science group, usually history, four fifths of these prescribing one unit of this character. Three institutions prescribe one unit of drawing.

It may be observed that the proportion of prescribed units is consistently higher in the universities and polytechnic institutes on private foundations and in the northeastern states, where institutions of this type predominate. Tax-supported institutions, under the stress of implied or prescribed obligations to accept what accredited high schools actually offer, concede greater latitude in election and admit conditioned students more freely.

The entrance requirements of the engineering colleges contrast sharply with those of schools of law, medicine, and dentistry, which almost invariably prescribe a pre-professional period of from two to four years in a college of arts and sciences. This difference is offset, in large measure, by the inclusion, in practically all engineering curricula, of a total of two or more academic years of humanistic and scientific studies which would be accepted toward an arts degree. Engineering educators, for the most part, consider it inadvisable to segregate cultural studies into a preliminary program, and hold it to be a definite advantage to teach the underlying scientific studies in close association with their engineering applications. A unified curriculum tends to capitalize the urge of interest in technical activities which characterizes middle adolescence as the driving force in an arduous educational program. The early interests of engineering students are more often concrete than philosophical, but their interest in literature and the human and social sciences can often be aroused as they approach maturity and begin to perceive the broader implications of technology as a force shaping civilization.

The tandem arrangement of curriculum, with the cultural and technical features segregated, has the effect of transferring the early orientation of students almost entirely to non-engineering auspices. This arrangement would meet with approval if it were well calculated to keep alive the early spark of interest and guide the student in his choice of engineering by a valid trial of aptitude and ability. The actual results of such a division of the curriculum, as exemplified by the experience of Columbia, Dartmouth, and Pennsylvania, have been felt as marked shrinkages in upper-class enrollments and graduations in engineering. The counter claim that a tandem division of program produces a final product of superior quality appears to be largely subjective in nature, especially where comparisons are based on equal

totals of time, since the divided programs usually require five years or more for their completion.

*Student survival.* The ratio of graduations to admissions may be taken as an approximate index of the selectivity of entrance requirements and practices. The records of the engineering colleges <sup>17</sup> show a disconcerting decline in this ratio in recent years. From an average of 43 per cent in 1900 the graduation ratio fell to an average of 37 per cent in 1924. The average proportion of graduations in the normal period of four years, without delay from any cause, is only 28 per cent. Nearly half of the eliminations take place during the first year, and two thirds before the beginning of the junior year. They are not due largely to failures in engineering subjects proper, but rather to failures in subjects which are continued from the preparatory curriculum. As there is little to indicate that the first two years of college curricula have been made more severe, that college grading standards have been raised, or that entrance requirements have been increased without due regard to their articulation with secondary curricula, engineering educators are fairly unanimous in attributing the fall of the graduation ratio to a process of dilution arising in secondary schools and due to their abnormal expansion of enrollments, with an attendant decline in standards of achievement.

The records of twenty-three institutions were drawn upon to ascertain the causes of student elimination.<sup>18</sup> More than half the cases are the direct result of scholastic failure, and the records show the following incidence of underlying causes: lack of ability or of interest, 51.2 per cent; poor preparation, 15.6 per cent; self-support, 8.1 per cent; social activities, 5.7 per cent; health, 4.7 per cent; student activities and athletics, 2.8 per cent; entrance conditions, 2.7 per cent; other known causes, 8.7 per cent. In evaluating these records allowance must be made for their subjective quality; for example, no allowance is made for inexpert teaching or for failure to provide competent diagnostic and remedial service.

There are definite indications that admission by examination leads to a higher ratio of graduations. In the opinion of institutions which use this method it also results in a higher and more homogeneous

<sup>17</sup> A Study of Admissions and Eliminations of Engineering Students. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 2, September, 1926; also in the *Journal of Engineering Education*, N.S., 17: 122, September, 1926.

<sup>18</sup> A Study of Admissions and Eliminations of Engineering Students. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 2, September, 1926; also in the *Journal of Engineering Education*, N.S., 17: 123, September, 1926.

selection of students. The higher selection is apparently by scholastic superiority rather than distinctive aptitudes for engineering.

*Auxiliary selective processes.* There is a strong urge toward methods of selective admission which are more directly indicative of aptitude and interest than scholastic records or examinations. Progress is retarded by our meager knowledge of specific engineering aptitudes and the means for measuring them. Zyve has recently proposed a promising test of scientific aptitude.<sup>19</sup> Experimental work with objective tests of special aptitude for engineering is in progress under Brigham at Princeton and Cooper Union. The preliminary result indicates only a moderate predictive value for scholastic success and survival, although the measure of innate ability is probably somewhat higher. The critical factor in scholastic survival appears to lie in the realm of interest and incentive. Tests of manual dexterity and mechanical aptitude have not been found of marked value, since analytical ability is far more significant as a criterion. Efforts by Moore,<sup>20</sup> Mills,<sup>21</sup> and Cowdery<sup>22</sup> to differentiate engineering aptitude by reference to occupational interests give indications of value but are too inconclusive to serve as practical procedures of admission.

The use of personal interviews and appraisals as an adjunct to scholastic requirements is limited to a small group of institutions with limited enrollments and freedom to base selection on nonobjective grounds.<sup>23</sup> A physical examination is usually incidental to the admission process, but is used as a selective test only in a few military schools and in cooperative courses subject to industrial regulations. Records indicate that health or physical condition is an important cause contributing to failure in about one case in twenty.

A probationary period at college in advance of the formal opening of the freshman year, to be spent in activities which would serve as a direct measure of aptitude, interest, and morale, has been suggested as a means of improving the selection of engineering students without undue hardship or complication. Others have suggested that the colleges require a period of industrial experience prior to admission, since

<sup>19</sup> D. L. Zyve. Test of Scientific Aptitude. *Journal of Educational Psychology*, 18: 525-546, November, 1927.

<sup>20</sup> C. S. Yoakum. Basic Experiments in Vocational Guidance. *Journal of Personnel Research*, 1: 18-34, May, 1922.

<sup>21</sup> John Mills. Engineering Aptitudes. *Journal of Personnel Research*, 3: 197-206, October, 1924.

<sup>22</sup> K. M. Cowdery. Measurement of Professional Attitudes. *Journal of Personnel Research*, 5: 131-141, August, 1926.

<sup>23</sup> Notably Swarthmore and Antioch colleges, and the University of Cincinnati, for nonresident applicants.



the final test of engineering education is the ability of the graduate to function under actual industrial conditions. Personnel records kept by engineering colleges indicate that fully 90 per cent of their students have been employed in some form of productive work for at least a short period before admission to college, and that half of this number have had some minor experience in engineering activities. Casual and transient employment in vacations is of undoubted value, but is scarcely a sufficient trial of interest and stamina. Insistence on probationary employment before admission, on a scale sufficient to serve as a selective measure, would involve a real break in the continuity of the scholastic program, concerning which there is a wide divergence of views. The probationary value of the concurrent employment in industry under the coöperative plan is urged as one of its principal merits.

Many engineering colleges have experimented with tests of general intelligence, but have found them of such moderate predictive value as to limit their use to an auxiliary procedure. Placement examinations,<sup>24</sup> designed to measure both aptitude and achievement in specific preparatory subjects, appear to afford the most trustworthy objective appraisal of the scholastic fitness and expectancy of the candidate for entrance to an engineering course of studies. Given thoroughly standardized examinations of this type, administered well in advance of entrance, it should be possible for the engineering colleges to set qualifying scores in accordance with the degree of significance attached to the particular subject. For example, high qualifying scores might be set in mathematics, science, and English, and ordinary qualifying scores in other preparatory subjects. A coördinated trial of placement examinations by a group of engineering colleges indicated that the grading standards of secondary schools are widely variable and do not, in themselves, constitute a trustworthy basis [for selective admission].<sup>25</sup>

*Evaluation of preparatory subjects.* Entrance requirements and admission procedures may be evaluated on four counts: (1) direct preparation for essential studies; (2) literacy and cultural development; (3) occupational and educational orientation; and (4) specific selective values.

It is universally agreed that *mathematics* is the most significant item

<sup>24</sup> G. D. Stoddard. Iowa Placement Examinations. *University of Iowa. Studies in Education*, Vol. 3, No. 2, August 15, 1925.

<sup>25</sup> H. P. Hammond and G. D. Stoddard. A Study of Placement Examinations. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 15, October, 1928; also in the *Journal of Engineering Education*, N.S., 19: 25-83, September, 1928.

of required preparation. Economy of time in the engineering curriculum demands that certain basic subjects, particularly mechanics, be begun at the earliest period at which the prerequisite sequence of mathematical and scientific subjects can be completed. This period, in turn, varies directly with the level and quality of attainment in mathematics at entrance. The handicap of inadequate or faulty mathematical preparation is most difficult to overcome and is not offset by excellence in other directions. Records of the freshmen admitted to thirteen colleges of engineering in 1923 and 1924 make this clear :<sup>26</sup>

|   |               |
|---|---------------|
| Total admitted as freshman . . . . .                          | 2431          |
| Admitted with no conditions in mathematics . . . . .          | 1701          |
| Admitted with conditions in mathematics . . . . .             | 730           |
| Survivors at the beginning of the sophomore year              |               |
| Of those without entrance conditions in mathematics . . . . . | 60.5 per cent |
| Of those with entrance conditions in mathematics . . . . .    | 38.5 per cent |

The engineering colleges in general require from one to one and a half units of mathematics in excess of other undergraduate schools. The tendency is to set mathematical requirements as high in amount and quality as the traffic or the regulations of state authorities will bear.

The stronger and more independent engineering schools require algebra, plane and solid geometry, and trigonometry, making a total of four units. Few of the tax-supported institutions are able to insist on trigonometry, and many are having difficulty in obtaining preparation in solid geometry. The present tendency of many high schools to scale down their offerings in mathematics, with official encouragement from state educational authorities, works serious hardship to the engineering colleges. There has appeared a movement toward a dual scheme of admission requirements, with a four-year curriculum in engineering open to students of superior mathematical preparation, and a five-year program for others who are eligible to enter college but are inadequately prepared for the study of engineering.

Poor mathematical preparation for the study of engineering and related branches of technology places the American colleges of engineering at a striking disadvantage in comparison with the higher technical schools of Europe. The age level of entrance is approximately the same, but the European student is more advanced by one and a

<sup>26</sup> A Study of Admissions and Eliminations of Engineering Students. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 2, September, 1926; also in the *Journal of Engineering Education*, N.S., 17: 140, September, 1926.

half to two years in point of attainment and is almost invariably more thoroughly grounded in fundamental science.

Training in *English* composition and speech and studies in *literature* are ranked second to mathematics as preparation for the study of engineering by fairly common consent. While only indirectly necessary for the studies in engineering proper, their importance arises from the fact that they so largely carry the burden of linguistic, literary, philosophical, and esthetic training in both preparatory and college curricula. Good preparatory training is essential, since the crowded college program affords only a limited margin for further training. The fact that a technological career is so often attractive to students with nonliterary tastes does not detract from the importance of English studies. The making of records, specifications, and proposals, and the giving of oral and written directions, are important aspects of all responsible engineering work. The engineer has special needs on the sides of clearness and precision, as he is required to frame his ideas so that they cannot be misunderstood even by nontechnical men. The modest cultural backgrounds of a majority of engineering students add to the importance of sound preparation in English in view of the growing share taken by engineers in the higher teamwork of industry and public affairs.

There is no general agreement on the value of preparatory work in the *physical sciences*: 40 per cent of the engineering colleges prescribe neither physics nor chemistry; 46 per cent require but one, usually with a free choice; and only 14 per cent require both. The economy of present preparatory requirements in physics and chemistry is open to doubt, since both of these subjects are traversed in the engineering curriculum with a quantitative and analytical emphasis which gains little profit from the qualitative and appreciative emphasis of secondary instruction adapted to miscellaneous groups of students. It is generally agreed that the sciences have great value in rousing and testing the interest of the preparatory student, though this interest does not always survive the test of more rigorous handling in college.

Less than half the engineering colleges require any *foreign languages* for entrance; others accept them as elective subjects. Latin is commonly accepted on a par with modern language, on the principle that it is an excellent auxiliary to the study of English and affords a rigorous logical discipline. French and German are preferred over Spanish because of their direct value to scientific and technological studies. There is a strong tendency in engineering circles to regard foreign languages as belonging essentially to the preparatory, rather than the college, stage of engineering education. Nearly 60 per cent

of the engineering colleges require no foreign language in their curricula, but nearly all offer it as elective work. To be of value in engineering a language must be pursued for a sufficient period and with sufficient vigor to lead to a good reading knowledge.

*History* and *civics* are of value as broadening elements of the preparatory program, but have little peculiar significance for engineering. The consensus of opinion among engineers is that the chief value of the *manual arts* in preparatory education is in the realm of orientation rather than specific training. Three institutions require drawing and none require manual training for entrance. Although the colleges have reduced the time given to manual arts in their own curricula, they have not encouraged the transfer of this work to the secondary schools by granting advanced credit for its completion. College instruction in mechanic arts is being placed more largely on a laboratory plane, with less emphasis on manual training as such.

*Adjustment between secondary and engineering curricula.* Growing tension between secondary schools and engineering colleges suggests an underlying divergence of educational ideals and standards of value. It appears that there is a desire for complete autonomy in secondary education which conflicts with the insistence of the engineering colleges on differential entrance requirements in mathematics and occasionally in physical science. The tendency of the secondary schools to stress preparation for citizenship rather than intellectual development runs counter to the desire of engineering educators to conserve time and to enhance the qualities of thoroughness and rigor through closely articulated secondary and college curricula. The popular assumption that all paths to professional careers are open freely to all graduates of all high schools is not viewed with favor in engineering circles. This situation is fairly unique in that the engineering profession is now virtually the only one which attempts to maintain any direct control of the content or quality of secondary education.

The tension may be relieved through the gradual emergence of two types of engineering colleges, one insisting upon a highly disciplinary type of preparation with strict requirements in mathematics, science, and language, and drawing upon a limited group of secondary schools, and the other accepting the prevailing types and levels of high-school preparation. A more probable development is the establishment of a dual scale of entrance requirements, leading to a four-year college curriculum for students of definite preparation and a five-year curriculum with a special introductory year for others. Transfers from junior colleges would then normally enter the third year of the five-year course.

A still more radical solution may come through the development of a dual system of secondary schools, one type offering definitely a terminal program and the other definitely a course in preparation for higher studies leading to intellectual and professional careers.<sup>27</sup> A clear-cut division on these lines would make it possible to approximate more closely the pace and quality of preparatory education abroad, and thus to open the way to a re-allocation of subject matter between the preparatory and the college curriculum. One year of work from the present engineering curriculum might then be transferred to the preparatory school without serious inconvenience; but with secondary education at its present levels, it is fairly imperative that the student of engineering be introduced to rigorous scientific studies without further delay.

### THE UNDERGRADUATE CURRICULUM

The prototype of the four-year curriculum in engineering was a plan of studies which Rensselaer Polytechnic Institute adapted from the higher technical schools of France in 1848 by adding a year's work in introductory subjects to accommodate the program to the lower levels of American secondary education.<sup>28</sup> This four-year plan, with its intimate blending of humanistic, scientific, and technical instruction, was easily assimilated into the university system as the barriers of prejudice against the applied sciences were broken down. It is worthy of note that the early engineering schools were developed in advance of a recognized engineering profession, that they antedated other forms of systematic scientific education, and that they were largely instrumental in introducing laboratory and project methods of teaching which have since become well-nigh universal. From the earliest days teachers of general subjects have shared equally with engineers in molding the programs and processes of engineering education. Prior to 1870 the curricula were more largely scientific than technical.<sup>29</sup> Engineering practice received little stress, and questions of economic construction were seldom introduced. From 1870 on, however, there

<sup>27</sup> W. S. Learned. *The Quality of the Educational Process in the United States and in Europe. Carnegie Foundation for the Advancement of Teaching. Bulletin*, 20, 1927.

<sup>28</sup> A Comparative Study of Engineering Education in the United States and in Europe, *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 16, June, 1929.

<sup>29</sup> A Study of Evolutionary Trends in Engineering Curricula. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 11, May, 1927; also in the *Journal of Engineering Education*, N.S., 17: 551, February, 1927.

was a steadily increasing concentration on technological considerations. This movement toward specialization apparently reached its peak about 1915. The present tendency is in the reverse direction, through increasing emphasis on general studies of a humanistic nature.

The extent and character of the changes in curricula between 1870 and 1923 may be illustrated by taking civil engineering as an example and comparing the average requirements in a group of ten representative institutions as of these two periods. For comparison, subject matter is classified into thirteen groups, and the required work in each is expressed in units and fractions of a complete academic year.

#### EVOLUTION OF CIVIL-ENGINEERING CURRICULUM

| SUBJECT GROUPS                                  | TOTAL REQUIREMENTS |      |      |
|---|--------------------|------|------|
|   | 1870               | 1900 | 1923 |
| Civil-engineering subjects . . . . .            | 0.58               | 1.25 | 1.30 |
| Other engineering subjects . . . . .            | 0.12               | 0.13 | 0.23 |
| General technical sciences . . . . .            | 0.68               | 0.73 | 0.71 |
| Free electives . . . . .                        | 0.07               | 0.05 | 0.19 |
| Mathematics . . . . .                           | 0.64               | 0.54 | 0.45 |
| Physical sciences . . . . .                     | 0.74               | 0.64 | 0.61 |
| Social sciences . . . . .                       | 0.22               | 0.13 | 0.13 |
| English . . . . .                               | 0.30               | 0.19 | 0.23 |
| Foreign languages . . . . .                     | 0.62               | 0.30 | 0.12 |
| Total technical and engineering subjects. . . . | 1.38               | 2.11 | 2.24 |
| Total mathematics and physical sciences . . .   | 1.38               | 1.08 | 1.06 |
| Total languages and social sciences . . . . .   | 1.14               | 0.62 | 0.48 |
| Total free electives . . . . .                  | 0.07               | 0.05 | 0.19 |

The relatively small attention given to distinctly technical studies in 1870 points to the paucity of specific materials for engineering instruction at that period. Engineering was then largely an empirical art. There were few authoritative treatises in English, and students were largely dependent on French and German for access to technical literature. With the lessened tool values of these languages as the quality and quantity of publication in English advanced, the time devoted to them was reduced correspondingly. The table illustrates the process by which a curriculum of limited length has been accommodated to the vast development of technological knowledge, through the progressive transfer of elementary mathematics to the preparatory curriculum, the transfer of time from graphic and manual arts to the

engineering subjects proper, and the elimination of the foreign languages. Concurrently there has been an increase in the total requirements to be covered within the four-year period of between 15 and 20 per cent on the average.

*Total content of curricula.* The range of total content, measured in semester hours, is distinctly higher than the customary 120 to 128 units of the arts curriculum. Fig. 1, which is based on detailed studies of the curricula of eighty-three engineering colleges, by John,<sup>30</sup> shows the range of variation for the five major engineering curricula. The range of the middle three fifths of all the cases is shown by shading, in order to indicate the degree of adherence to a norm. There can be

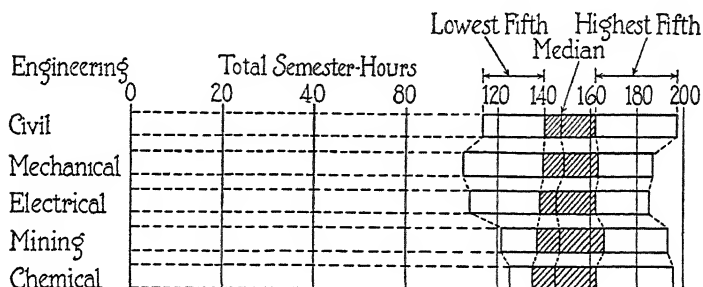


FIG. 1. Total requirements in engineering curricula expressed in semester-hours

little question that these figures represent an actual loading much in excess of that of the arts student, as actual time-log records kept by groups of engineering students show an average working week ranging from fifty to sixty clock hours and upward. Leisure is a negligible factor in engineering education. The present tendency is to reduce this load somewhat. A maximum loading of 144 credit hours, exclusive of required summer courses and of physical and military training, has been recommended by the Board of Investigation representing the colleges.<sup>31</sup>

*Differentiation and specialization.* Engineering curricula follow the traditional technical divisions of the profession but do not extend

<sup>30</sup> W. C. John. A Study of Engineering Curricula. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 10, May, 1927; also in the *Journal of Engineering Education*, N.S., 17: 469, January, 1927.

<sup>31</sup> W. E. Wickenden. Preliminary Report to the Board of Investigation and Coördination and the Society for the Promotion of Engineering Education. *Journal of Engineering Education*, N.S., 17: 22, September, 1926.

differentiation largely into realms of individual specialization. A characteristic scheme of differentiation of undergraduate programs is shown below :

| FIRST YEAR    | SECOND YEAR AND THIRD YEARS | FOURTH YEAR   |
|---------------|-----------------------------|---|
| Common to all | Civil engineering           | <ul style="list-style-type: none"> <li>Structural</li> <li>Sanitary</li> <li>Transportation</li> <li>Hydraulic</li> </ul> |
|               | Mechanical engineering      | <ul style="list-style-type: none"> <li>General</li> <li>Power</li> <li>Industrial</li> <li>Automotive</li> </ul>          |
|               | Electrical engineering      | <ul style="list-style-type: none"> <li>Power</li> <li>Communications</li> </ul>   |
|               | Mining engineering          | <ul style="list-style-type: none"> <li>Mining</li> <li>Metallurgy</li> <li>Petroleum</li> </ul>                           |
|               | Chemical engineering        | <ul style="list-style-type: none"> <li>General</li> <li>Electrochemical</li> <li>Fuel technology</li> </ul>               |

This general scheme of differentiation is greatly extended in some institutions and much reduced in others. The Massachusetts Institute of Technology, for example, has a common first year, followed by nine major branches which expand into thirty group options in the fourth year. Purdue University, on the other hand, has four "schools," covering respectively civil, mechanical, electrical, and chemical engineering, with relatively few group options in each. Brown University has three years of work in common, with only a final year of differentiation. Stevens Institute has a single broad curriculum in mechanical engineering. When the scheme of differentiation is extended beyond the above limits, the major divisions most frequently added relate to architectural and marine engineering.

The schematic outline above does not indicate the extent to which the subject matter after the first year is drawn from common sources. The curricula in civil, mechanical, and electrical engineering make up a kindred group and have more than three quarters of their work in the second year and about half in the third year substantially in common. The curricula in the mining group differ but little among themselves in the second year and have much in common in the third year. The usual curricula in chemical engineering have a large part of their



work in common with other groups in the second year, but are fairly distinct thereafter except for some subjects in common with mechanical engineering. All the curricula are relatively distinct in the fourth year, with not more than one tenth of their material from common sources.

The differentiation of engineering curricula is based quite as much on considerations of educational efficiency as on those of professional specialization. These curricula include more than sixty significant families of subject matter in all, and there are more than one hundred and eighty distinct items within these groups, disregarding all differences of detail. Some logical division of this great range of scientific

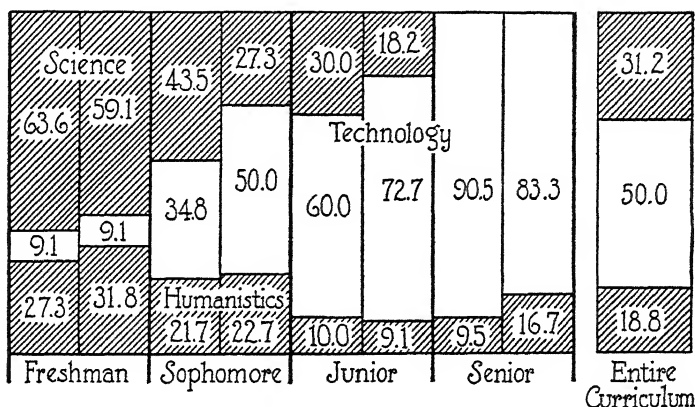


FIG. 2. Division of typical curriculum into major groups of subjects

and technical subjects is essential, and a grouping in accord with the organization of the profession is advantageous. The program needs to be adapted to a progressive choice and refinement of the student's objectives. An orderly progression from common, broad fundamentals to a more restricted field of attention makes for cumulative rather than scattering results. Some division of labor in supervising students, advancing engineering knowledge, and maintaining liaison with industrial and professional activities is expedient.

*Structure of curricula.* Engineering curricula quite generally exhibit three characteristics of subject matter. The proportionate division of time and its distribution throughout the four-year period is illustrated in Fig. 2, by the example of the Massachusetts Institute of Technology. It is not always the case that the humanistic sequence extends through-

out all four years, although this arrangement has been definitely advised by the Board of Investigation and is being more widely adopted. There is a growing conviction that the essentially cultural and societal features of the curriculum should not be crowded into the first two years exclusively, but should be interwoven with the technological subjects with a view to a more positive social orientation of the latter. Conversely, there is a desire to introduce more technological work into the early years, as a stimulus to interest, an aid to the trial of aptitude, and an increment of practical value to students who complete only one or two years of the course.

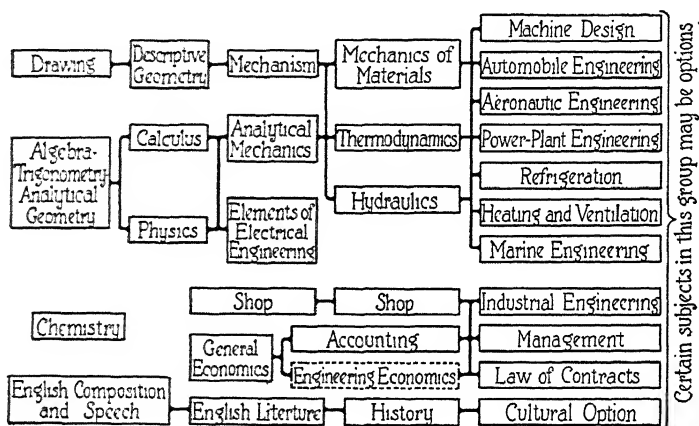


FIG. 3. Relationship and sequence of subjects in mechanical-engineering curricula

The working out of the sequential principle and the organic relations of subject matter are indicated schematically in Fig. 3. Similar diagrams might be drawn for all engineering curricula.

*Detailed requirements.* Aside from imitation there has been no standardizing influence at work upon engineering curricula, yet they are strikingly true to type in their general outlines. The different colleges present a thousand or more variations of detail. The following schematic plan is somewhat simpler than the majority of actual curricula and provides somewhat more generously for humanistic studies. While not formally sanctioned by the Board of Investigation, it embodies the essential suggestions made by that body.<sup>32</sup> Time allotments to

<sup>32</sup> W. E. Wickenden. Curriculum Revision. *Journal of Engineering Education*, N.S., 17: 792, April, 1927.

major engineering subjects and to group options in the fourth year are shown undivided, so as to leave considerable latitude for adjustment to local views and circumstances. The scheme shown assumes average entrance requirements in mathematics, or about three units. If four units are required, a rearrangement may be made so that the pivotal subject of mechanics may be begun at the start of the second year, and the time gained used to extend the range of work in the major field at the end of the course.

## SCHEMATIC CURRICULUM IN SEMESTER CREDIT UNITS

*Introductory Stage, Two Years*

| FIRST YEAR, IN COMMON         | FIRST SEMESTER | SECOND SEMESTER |
|-------------------------------|----------------|-----------------|
| Mathematics . . . . .         | 5              | 5               |
| Inorganic chemistry . . . . . | 4              | 4               |
| Graphics . . . . .            | 3              | 3               |
| English . . . . .             | 3              | 3               |
| Shop or surveying * . . . . . | 2              | 2*              |

\* Option in second semester.

| SECOND YEAR  | CIVIL |   | ELEC-<br>TRICAL |   | MECHAN-<br>ICAL |   | CHEMI-<br>CAL |   | MINING |   |
|--|-------|---|-----------------|---|-----------------|---|---------------|---|--------|---|
| Mathematics . . . . .                                | 4     | 4 | 4               | 4 | 4               | 4 | 4             | 4 | 4      | 4 |
| Physics . . . . .                                    | 5     | 5 | 5               | 5 | 5               | 5 | 5             | 5 | 5      | 5 |
| Chemistry . . . . .                                  |       |   |                 |   |                 |   | 4             | 4 | 4      |   |
| Geology . . . . .                                    |       |   |                 |   |                 |   |               |   |        | 4 |
| Economics . . . . .                                  | 3     | 3 | 3               | 3 | 3               | 3 | 3             | 3 | 3      | 3 |
| Mechanism and design . .                             |       |   | 4               |   | 4               |   |               |   |        |   |
| Surveying and plotting . .                           | 4     |   |                 |   |                 |   |               |   |        |   |
| Mechanics . . . . .                                  |       | 4 |                 | 4 |                 | 4 |               |   |        |   |
| Laboratory technology or<br>engineering problems . . | 1     | 1 | 1               | 1 | 1               | 1 | 1             | 1 | 1      | 1 |

## REQUIRED SUMMER TERM

*Four to six weeks*

|   |                                   |
|---|-----------------------------------|
| Surveying . . . . .   | Civil engineering curriculum      |
| Shop work . . . . .   | Mechanical engineering curriculum |
| Introduction to electrical engineering . .                              | Electrical engineering curriculum |
| Introduction to chemical engineering . .                                | Chemical engineering curriculum   |
| Mine surveying (2 weeks), geology<br>and mineralogy (4 weeks) . . . . . | Mining engineering curriculum     |

*Advanced Stage, Two Years*

| THIRD YEAR   | CIVIL |     | ELECTRICAL |     | MECHANICAL |     | CHEMICAL |     | MINING |     |
|--|-------|-----|------------|-----|------------|-----|----------|-----|--------|-----|
| Mathematics, physics, chemistry, biology, or geology . . . . .                 | 3     |     | 3          |     | 3          |     | *        | *   | 3      | 3   |
| English or foreign language . . .  | 3     | 3   | 3          | 3   | 3          | 3   | 3        | 3   | 3      | 3   |
| Mechanics and materials . . . .  | 4     | 4   | 4          | 4   | 4          | 4   | 4        | 4   | 4      | 4   |
| Hydraulics . . . . .   |       | 4.5 |            |     |            |     | 2        |     |        |     |
| Heat power . . . . .   | 4.5   |     | 3          | 4.5 | *          | *   | 3        | 4.5 | 4.5    |     |
| Electric power . . . . .   |       |     | *          | *   | 3          | 4.5 |          |     |        |     |
| Major engineering subject . . . .  | 2.5   | 5.5 | 4          | 5.5 | 4          | 5.5 | 5        | 5.5 | 2.5    | 7.0 |
| FOURTH YEAR  |       |     |            |     |            |     |          |     |        |     |
| Foreign languages, history, and government, or other general studies . . . . . | 3     | 3   | 3          | 3   | 3          | 3   | 3        | 3   | 3      | 3   |
| Electric power . . . . .   | 4.5   |     | *          | *   |            |     | 4.5      |     | 4.5    |     |
| Hydraulics . . . . .   |       |     | 4          |     | 4          |     |          |     | 2      |     |
| Major engineering and administrative subjects (group options) . . . . .        | 9.5   | 14  | 10         | 14  | 10         | 14  | 9.5      | 14  | 7.5    | 14  |

\* Included in major engineering subject.

| OPTIONAL GRADUATE YEAR   | FIRST SEMESTER | SECOND SEMESTER |
|--|----------------|-----------------|
| Science or economics . . . . .                                 | 4 to 6         | 4 to 6          |
| General nontechnical study . . . . .                           | 0 to 3         | 0 to 3          |
| Engineering and administrative subjects and research . . . . . | 13 to 9        | 13 to 9         |

All parties agree that the undergraduate curriculum should be confined almost wholly to "fundamentals," but there is no objective check on the relative importance of the specific subjects of instruction. Expressions of opinion by practicing engineers and by mature teachers are the best available bases of ranking.<sup>33</sup>

## RANKING OF FUNDAMENTAL SUBJECTS IN ENGINEERING CURRICULA

*Group I. Subjects receiving Universal Assent*

|                     |                                    |
|---------------------|------------------------------------|
| Inorganic chemistry | Mathematics (including calculus)   |
| General physics     | Drawing and descriptive geometry   |
|                     | English composition and literature |

<sup>33</sup> A Summary of Opinions Concerning Engineering Curricula. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 9, November, 1926; also in the *Journal of Engineering Education*, N.S., 17: 366, December, 1926. Also, Opinions of Professional Engineers Concerning Educational Policies and Practices. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 13, December, 1927; also in the *Journal of Engineering Education*, N.S., 18: 225, December, 1927.

*Group II. Subjects ranked in Order of Relative Importance*

| SUBJECTS                              | RANKED BY PROMINENT ENGINEERS |       |            |            |        |     | RANKED<br>BY<br>TEACHERS |
|---------------------------------------|-------------------------------|-------|------------|------------|--------|-----|--------------------------|
|                                       | Chemical                      | Civil | Electrical | Mechanical | Mining | All |                          |
| Applied mechanics . . . . .           | 1                             | 1     | 1          | 1          | 1      | 1   | 2                        |
| Mechanics of materials . . . . .      | 5                             | 2     | 2          | 2          | 6      | 2   | 1                        |
| Elementary electrical engineering . . | 3                             | 6     | 5          | 3          | 2      | 3   | 3                        |
| Economics . . . . .                   | 2                             | 4     | 6          | 7          | 3      | 4   | 5                        |
| Hydraulics . . . . .                  | 9                             | 3     | 4          | 5          | 5      | 5   | 4                        |
| Plane surveying . . . . .             | 17                            | 5     | 11         | *          | 4      | 6   | 7.                       |
| Heat-power engineering . . . . .      | 6                             | 10    | 3          | 4          | 10     | 7   | 6                        |
| Business law . . . . .                | 10                            | 7     | 8          | 9          | 8      | 8   | 8                        |
| Shop practice . . . . .               | 7                             | 13    | 7          | 6          | 12     | 9   | 9                        |
| Modern languages . . . . .            | 4                             | 9     | 10         | 12         | 7      | 10  | 14                       |
| Accounting . . . . .                  | 12                            | 8     | 9          | 10         | 9      | 11  | 12                       |
| Management . . . . .                  | 8                             | 11    | 12         | 8          | 11     | 12  | 11                       |
| Psychology . . . . .                  | 11                            | 12    | 13         | *          | 16     | 13  | 16                       |
| Industrial relations . . . . .        | 13                            | 16    | 14         | 11         | 13     | 14  | 13                       |
| History of institutions . . . . .     | 16                            | 15    | 15         | 13         | 14     | 15  | 10 <sub>1</sub>          |
| Political science . . . . .           | 14                            | 14    | 16         | *          | 15     | 16  | 15                       |
| History of thought . . . . .          | 15                            | 17    | 17         | *          | *      | 17  | 17                       |

\* Not included in inquiry.

Numbers in italics in the above table indicate the subjects which were not recommended for inclusion in all engineering curricula by a majority of the group. It will be noted that while there are considerable differences in the estimates of relative importance among the several groups of engineers, there is striking agreement between the combined group of engineers and the group of teachers on the first nine items, and reasonable agreement on the ranking of the entire group. The teachers were probably more restrained by direct knowledge of time limitations in recommending subjects for general inclusion.

It is usually the case that 60 to 70 per cent of the time is devoted to the subjects of the first group and the first eleven subjects of the second group, about 5 per cent to electives or to the last six subjects of the second group, and the remaining 30 to 40 per cent to subjects distinctive of the major branch of engineering. The subjects of specialization in the several principal curricula are usually chosen from the following groups:

*Civil engineering:* advanced surveying; framed structures; reinforced concrete; foundations; water supply; sewerage and waste disposal; railroad engineering; highway engineering; building construction; water-power engineering.

*Mining engineering:* geology; mineralogy; mining methods; assaying; ore dressing; mine operation; metallurgy; petroleum production; petroleum refining.

*Mechanical engineering:* Mechanism; machine design; mechanics of machines; power plants; industrial engineering; refrigeration; heating and ventilation; automotive engineering; aeronautic engineering; marine engineering.

*Electrical engineering:* electrical machine design; power plants; transmission and distribution; communication; illumination; industrial power.

*Chemical engineering:* chemical analysis; physical chemistry; organic chemistry; electrochemistry; technical analysis; industrial chemistry; chemical-engineering operations; fuel technology; metallurgy; plant design.

*Coöperative curricula.*<sup>34</sup> The coöperative plan, which provides for the alternation, at regularly scheduled intervals, of periods of instruction in college and of supervised and correlated experience in industry, was first instituted by Dean Herman Schneider at the University of Cincinnati in 1906. It has since been adopted by twenty-one engineering colleges, two of which have subsequently abandoned it. At present about one tenth of the total number of engineering students in the United States are enrolled in coöperative courses. The plan is gaining in adoption, more through the establishment of new schools than by its introduction in schools already well established. This is probably a natural result of difficulties met in adapting a two-shift plan of instruction extending over eleven months of the year to the traditional academic organization and routine. This difficulty is minimized, however, when the academic quarter or semester is used as a time unit in both academic and industrial assignments. Many of the significant details of the application of the plan are given on the following page.

In addition to the institutions covered by the above table the coöperative plan is in operation at Y.M.C.A. schools of engineering in Cleveland and Buffalo and is being introduced at the University of Tennessee. Antioch College, which adopted the plan in 1921 and has given it wide publicity, offers a concentration group in engineering sciences but has not yet instituted complete engineering curricula.

The college curriculum under the coöperative plan differs in only minor respects from the usual program. A small amount of instruction for which an equivalent is obtained through industrial experience, such as shop-work, drawing, or surveying, is either omitted or curtailed. It

<sup>34</sup> A Study of the Coöperative Method of Engineering Education. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 12, May, 1927; also in the *Journal of Engineering Education*, N.S., 17: 669, March, 1927; also, C. W. PARK. Coöperative System of Education. *University of Cincinnati Studies*, Series 2, Vol. 11, Part 1. 1925.

## DETAILS OF COÖPERATIVE PROGRAMS

| INSTITUTIONS IN ORDER OF ADOPTION                      | PLAN USED EXCLUSIVELY | LENGTH OF COURSE | YEARS OF COÖPERATION | PERIOD OF ALTERNATION | TOTAL WEEKS |         |
|--|-----------------------|------------------|----------------------|-----------------------|-------------|---------|
|  |                       |                  |                      |                       | Industry    | College |
| Cincinnati (1906) . . . . .                            | Yes                   | 5 years          | 5                    | 4 weeks               | 123         | 107     |
| Pittsburgh (1910) . . . . .                            | Yes                   | 4 years          | 2                    | Semester              | 52          | 131     |
| Boston Y.M.C.A. (1910)* . . . . .                      | Yes                   | 4 years          | 3                    | 5 weeks               | 72          | 84      |
| Boston Y.M.C.A. (1910)* . . . . .                      | Yes                   | 4 years          | 1                    | 5 weeks               | 20          | 124     |
| Georgia School of Technology (1912) . . . . .          | No                    | 5 years          | 5                    | 4 weeks               | 124         | 111     |
| Akron (1914) . . . . .                                 | Yes                   | 5 years          | 5                    | 3 weeks               | 123         | 106     |
| Detroit University (1915) . . . . .                    | Yes                   | 5 years          | 5                    | 2 weeks               | 124         | 107     |
| Massachusetts Institute of Technology (1916) . . . . . | No                    | 5 years          | 3                    | Semester              | 79          | 136     |
| Marquette (1919) . . . . .                             | Yes                   | 5 years          | 3                    | 4 weeks               | 72          | 133     |
| Newark (1919) . . . . .                                | Yes                   | 4 years          | 2                    | 2 or 4 weeks          | 69          | 116     |
| Evansville (1920) . . . . .                            | Yes                   | 5 years          | 4, 5                 | 3 weeks               | 110         | 119     |
| New York University (1921) . . . . .                   | No                    | 5 years          | 3                    | Semester              | 65          | 144     |
| Detroit Y.M.C.A (1920)† . . . . .                      | Yes                   | 5 years          | 5                    | 2 weeks               | 139         | 90      |
| North Carolina (1922) . . . . .                        | Yes                   | 4 years          | 1                    | 8 weeks               | 26          | 137     |
| Drexel (1925) . . . . .                                | Yes                   | 5 years          | 4                    | 3 months              | 84          | 132     |
| Louisville (1925) . . . . .                            | Yes                   | 4 years          | 2                    | 3 months              | 52          | 132     |
| Southern Methodist (1925) . . . . .                    | Yes                   | 5 years          | 5                    | 4 weeks               | 124         | 111     |

\* Northeastern University.

† Detroit Institute of Technology.

will be noted from the above table that the total period of college instruction is not largely reduced except in the case of two Y.M.C.A. institutions. At Cincinnati and other institutions modeled closely upon it the hours of attendance during the college periods are raised to almost thirty-five per week in order that the total instruction normally included in a four-year resident curriculum may be encompassed. The coöperative course of the Massachusetts Institute of Technology includes one year of graduate work and leads to the master's degree. In order that the master's requirements may be met in full a certain amount of instruction is given by members of the Institute faculty at the industrial plants during each of the industrial periods. The Institute coöperates with a limited group of concerns under a definite agreement whereby the student spends his industrial periods in a prescribed sequential program. All other coöperative institutions place their students with a large and varied group of industries without a planned sequential program. A special officer known as a coördinator makes the industrial assignments, keeps a cumulative record of the

student's experience and progress, maintains contact with the student and employer, and endeavors to tie together the industrial and scholastic phases as intimately and in as orderly a sequence as is possible in a catch-as-catch-can plan. The excellence of this coordination is widely variable. At its lowest extreme it amounts to little more than intermittent education.

Numerous advantages are claimed for the cooperative plan. The foremost is the value of concurrent practical experience in reinforcing theoretical instruction, in giving a knowledge of men and organization and in affording a realistic trial of the student's aptitude, interest, and stamina. It would appear that economic attractions have been a considerable factor in the adoption of the plan by a number of institutions with small resources. A two-shift plan permits a larger number of students to be served with a given physical plant; tuitions may be collected for five years instead of four; meager laboratory facilities may be concealed behind the announcement "The industries of . . . are our laboratories"; teachers may be kept occupied eleven months in the year; and students are enabled to earn their tuition fees and part of their living expenses. Many of these considerations are legitimate steps toward cost-balancing in education, provided the amount and quality of instruction are not sacrificed or the staff overworked. The plan is generally regarded with favor by industrialists, as a means of simplifying their problems of recruitment, training, and adjustment. There are indications that it tends to extend the influence of technical education and control to small industries not otherwise reached. Present evidence indicates that graduates trained under the cooperative plan do not surpass others of equal ability and maturity in either responsibility or earning power attained after an equalizing period of experience. Experience has not yet made clear what the peculiar merits and functions of the plan are; the indications are that they consist in preparing men for the operating direction of industrial enterprises. The cooperative plan is clearly beyond the experimental stage and is widely accepted as a valuable element in the general scheme of technological education, — a worthy alternative to the traditional plan of resident curricula followed by introductory experience.

*Resumé of current trends and problems.* It is a cardinal doctrine in engineering education that principles are best learned in conjunction with their applications. In form the curriculum is a progression from general principles to specific problems; in practice the procedure within this deductive framework is largely inductive and concrete. The present tendency is to parallel theoretical study with technological instruction, to illustrate mathematics, physics, and chemistry liberally



with situations and problems from engineering sources, and to test continually the students' ability to apply as well as to learn. To these ends it is considered highly desirable, if not essential, that engineering students be taught the fundamental sciences in distinct groups, and not associated with students to whom these subjects have little or no professional importance.

The régime of work in engineering colleges is traditionally exacting. The pressure of a crowded curriculum tends to create a task system of teaching, marked by day-to-day work assignments, numerous concrete exercises, problems, projects, tests, and reports to be worked out from preassembled materials, to be checked up by continuous inspection, and to be accounted for in piecemeal grades. Highly objectified requirements appeal to the habit of mind of the engineering student, who often prefers a schedule of tasks to a vague quota of requirements. This régime of work has admitted disciplinary values, but tends to favor sheer industriousness unduly. Unless the teaching is notably skillful, there may be failure to evoke the student's originality and resourcefulness and to develop his capacity for self-directed work. Experiments with honors courses and other autonomous methods are in progress in a number of institutions. These efforts aim at a plan better adapted to students of superior gifts and original powers, and aim more largely at changes of régime than of scope and content of instruction.

The quality of the teaching in engineering colleges is generally sound, seldom notably poor, but only occasionally distinguished. There is much teaching that is excellent in detail but limited in perspective, reflecting a bias toward subjects as ends in themselves rather than as elements in a larger whole. A larger measure of coördination is being gained in some cases through centralized authority. Coöperative summer schools for the improvement of teaching processes and of coördination between subjects have been introduced with success.<sup>35</sup> The fact that few teachers in engineering colleges have had formal training in the art of teaching adds to the importance of such supplementary means. These schools are giving an impetus to a closer study of the learning process as applied to semi-adult students motivated by professional aims as well as by specific interest. By directing attention to historical backgrounds, creative personalities, and social changes associated with the development of engineering knowledge, they are

<sup>35</sup> The Summer School for Engineering Teachers, Sessions of 1927. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 14, March, 1928; also in the *Journal of Engineering Education*, N.S., 18: 362-454, 522-620, January-February, 1928.

adding an element of cultural and social orientation to subjects traditionally regarded as technical.

A silent contest is being waged between forces which make for specialization and those which oppose it. Few openly advocate specialization for undergraduates, but there is a natural tendency for enterprise and personal ambition to seek expression through new and specific subjects and programs. More than eighty more specialized variants of the group of basic curricula may readily be identified. There is a considerable tendency to introduce curricula on functional lines intended as preparation for executive, managerial, and commercial activities in distinction from the technical activities of engineering. These functional programs are essentially hybrid in character, with a base of general science, language, economics, and elementary technology in common with the first two years of the normal engineering program, and with the last two years divided almost equally between semitechnical courses in engineering and business administration. These programs often find favor with students of good general ability who find their interest in the analytical problems of engineering to be secondary, and who desire to enter the engineering industries in a business capacity.

Experience indicates that administrative responsibility is a common heritage in all branches of engineering, and not an exclusive function for a particular college curriculum. The general sentiment of engineers, practitioners,<sup>36</sup> and teachers<sup>37</sup> is in favor of curricula which follow the major lines of organization in the profession, which avoid close specialization on technical, functional, or administrative lines during the undergraduate period, and which postpone specialized and business training to a post-graduate period or to a period of part-time education in the early years of engineering experience. A minor proportion of engineering students have specific aims and are willing to sacrifice some of the more general subjects in order to pursue them. Such students are possibly best served through specialized programs. As long as these are offered by relatively few institutions or are associated with research centers of more than local reputation no serious violence is done to the ideal of broad education for the many.

<sup>36</sup> Opinions of Professional Engineers concerning Educational Policies and Practices. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 13, December, 1927; also in the *Journal of Engineering Education*, N.S., 18: 224, December, 1927.

<sup>37</sup> A Summary of Opinions concerning Engineering Curricula. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 9, November, 1926; also in the *Journal of Engineering Education*, N.S., 17: 357, December, 1926.

The chief point of differentiation of engineering within the broad realm of applied science is its concern with questions of economy. Scientific technology supplies the means, and economic situations the ends, of engineering. The curriculum and teaching processes commonly stress the former and touch lightly on the latter considerations. The one is often stated to be within the realm of rational science, and the other within the realm of practical judgment. With the development of methods of systematic economic analysis in engineering, emphasis is turning more strongly to these phases of teaching, principally in the engineering subjects proper. Case materials, to supplement the present technological matter on the economic side, are in active demand.

It is a striking anomaly that institutions giving a technological training of more intensive and specific nature than that of an engineering college have not gained a stable place in the United States. Schools of this type have in general been drawn into the college field, resulting in a one-sided educational development. Recent surveys have indicated that fully half of the occupational demand for recruits of technical training could be met to better advantage through training of a more intensive type. Probably half or more of the students who now resort to the engineering colleges could be served better in a briefer and more direct type of training. The present facilities are better adapted to the needs of the staff, or expert, side of industry than to the line, or operating, side. It would seem to be good public policy to check for a time the multiplication of colleges with courses for degrees and to divert all expansion into the unoccupied field of a more intensive training.

### POST-GRADUATE STUDY AND RESEARCH

*Scope and purposes.* Undergraduate engineering curricula are well adapted to cover fundamental ground and to serve group needs with little attention to specialization. More advanced types of training, in order to meet individual needs, must be largely individualized and autonomous in form. Advanced training in engineering may be classified with fair accuracy into a science-research type and a professional-specialization type. The first is essentially a university function pertaining to the graduate school; the second is a university function only in part and largely requires a setting of active engineering effort.

The type of post-graduate study which consists principally of advanced and individualized study and research in engineering sciences

may be carried on in any academic setting, given men, libraries, laboratories, and means. It offers no peculiar problems of administration and may be directed either by a graduate college or by an engineering college or department, as may be expedient. It leads properly to a degree of academic character, — that of master or doctor. Its aims are the development of the capacity and resourcefulness which equip the individual to contribute to the advancement of engineering knowledge and art. It is, or should be, an intellectual process of high order, calling for notable powers of extemporization and invention, and not merely an extension of the range of undergraduate studies. Graduate work of this kind has been extensively developed by only a small group of engineering colleges. Less than a dozen institutions are now equipped and staffed with notable facilities, both in engineering and in collateral sciences, for a wide range of work of this nature. Possibly an equal number of other institutions afford such facilities in one or more limited fields. Graduate schools of this character are natural centers of recruitment for engineering research and development functions in industry and for teachers of the fundamental engineering sciences. The demand from these sources is rising, and the financial inducements of industrial research have tended to approximate those of the more important forms of executive and commercial responsibility.

There has been no corresponding advance in the financial rewards of a teaching career, and the supply of candidates for teaching appointments has been too small to allow the colleges to insist upon advanced scholarly qualifications. The colleges have been more inclined to give weight to active professional experience, with the result that the doctorate is comparatively rare among the teachers of distinctly engineering branches.<sup>38</sup> There is now a growing tendency to insist upon an earned second degree and a higher appreciation of the doctorate. In the majority of the engineering colleges research has been regarded as an optional and incidental form of activity until quite recently, and much of the work now in progress under that name is a comparatively routine form of investigation. These conditions have tended to hold down the development of graduate work in engineering branches. The most active branches are those fairly recently and directly derived from the physical sciences, — electrical and chemical engineering, — while mechanical engineering retains much of its traditional empiricism and is much more backward.

<sup>38</sup> A Study of Engineering Teaching Personnel. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 4, October, 1926; also in the *Journal of Engineering Education*, N.S., 16: 299, December, 1925.

An increasing number of students of superior ability now seek an additional year of training after the undergraduate course, in which their technical studies may be extended, more emphasis may be given to full-scale projects, and more initiative may be thrown on the student than the undergraduate program and régime will allow. This type of advanced work aims more largely at technical specialization than at preparation for original work. It is a fairly appropriate field of effort for any institution with teachers of high professional standing and attainments, but there is a natural tendency to institutional specialization at this stage as students are attracted to men and institutions of notable repute. There is a natural limit to the extent of this work on college premises, since the mastery of the more advanced forms of engineering practice requires an actual professional or industrial environment and actual participation of responsible quality. Engineering, it will be remembered, is an art with fairly definite technique but with infinite variety in its handling of actual situations. Like any other art its underlying principles and technique may be learned through formal instruction, but facility in the practice of the art comes only through actual performance under the direction and criticism of a master.

*Extent of post-graduate work.*<sup>39</sup> A survey of graduate work in engineering, made in 1924, showed that 81 out of a total of 151 institutions, or 53 per cent, offer post-graduate courses at least on paper. A total of 1002 graduate students in engineering were enrolled, seven eighths of the total being in ten institutions and one fifth in the Massachusetts Institute of Technology. Two hundred and thirty-two graduate students were enrolled in electrical engineering, 156 in chemical engineering, 98 in civil engineering, 92 in mechanical engineering, and 70 in mining and metallurgical engineering. A total of 572 graduate degrees were conferred in the academic year 1924-1925 for work done in course, not counting professional degrees awarded out of residence on the basis of experience and a thesis. Eight doctorates were conferred, 482 second degrees in the form of Master of Science or Master of Engineering, and 82 earned second degrees in the form of Civil Engineer, Electrical Engineer, and the like. The ratio of graduate degrees to undergraduate degrees was approximately 1 to 16. In 1924-1925 a total of 227 fellowships were offered and 206 were held, 64 of these being full-time appointments.

<sup>39</sup> A Study of the Supplementary Activities of Engineering Colleges. *Society for the Promotion of Engineering Education. Investigation of Engineering Education, Bulletin*, 5, November, 1926; also in the *Journal of Engineering Education*, N.S., 17: 279-299, November, 1926.

The present ratio of advanced to first degrees is clearly below the optimum. A much larger number of doctorates would be warranted by the recruitment of teachers and research workers. In a survey of 143 institutions it was found that less than 5 per cent of the teachers of engineering subjects now hold the doctor's degree. While the doctorate will probably never become the criterion of academic standing in engineering circles that it is in other branches of higher education, the present proportions should obviously be largely increased. Estimates of a reasonable ratio of second degrees in course to first degrees vary considerably, but the best-qualified opinion lies in the range between 1 to 10 and 1 to 4.

*Curricula.* There is no typical curriculum of post-graduate studies in engineering. Programs are generally elective, with moderate restrictions in the groupings of major and minor subjects. A few institutions award a second degree for a program made up essentially of additional undergraduate studies, but this practice is being strongly discouraged. A reading knowledge of French and German is usually prescribed as a qualification for the doctorate but is not commonly required for the second degree except in the field of chemical engineering. A comprehensive examination is required for the doctorate but not often for a second degree. Graduate work of the science-research type includes advanced work in mathematics and physical science as a matter of necessity. Instruction follows the usual forms of lecture, seminar, and project work. Research is a secondary feature of work for the master's degree and a major feature of work for the doctorate.

*Advanced training out of college.* It has long been common for industrial concerns to conduct "cadet" courses, consisting of a systematic program of experience with occasional lectures or conferences, in order to give newly recruited graduates some familiarity with their organization and special practices. The development of advanced educational work in industry, comparable in grade and purpose to graduate study, is a much more recent and restricted movement. The most conspicuous examples have been set in the electrical industries, where problems of design and construction touch the advancing front of scientific research on one side and the developing art of repetitive production on the other. These industrial courses usually borrow the academic method of lecture and seminar teaching and combine it with a sequence of work projects and individual teaching.

*Coördination of advanced work in colleges and industries.* A movement is now developing to bring these industrial courses into closer touch with the university graduate schools. The coöperative courses of the

Massachusetts Institute of Technology in both chemical and electrical engineering are organized in conjunction with a chosen group of concerns and include a year of graduate study and research. This institution also provides graduate instruction for selected engineers of the design staff of the Lynn works of the General Electric Company. The University of Pittsburgh has recently inaugurated a system of graduate instruction jointly with the Westinghouse Electric and Manufacturing Company,<sup>40</sup> with much of the teaching done by specialists in the industry. The Carnegie Institute of Technology, in association with the United States Bureau of Mines, the Pennsylvania Department of Mines, and the bituminous-coal industry of the Pittsburgh area, conducts a definite post-scholastic program of three years, leading to the degree of Engineer of Mines. The Polytechnic Institute of Brooklyn provides for selected graduates a one-year program of supervised experience and part-time instruction, leading to a professional degree. A noteworthy contribution to the development of graduate training in conjunction with experience has been made by the University of Wisconsin,<sup>41</sup> which has instituted graduate seminars and research projects for practicing engineers in the metallurgical and electrical industries of Milwaukee, who are enrolled as candidates for the master's degree.

The developments outlined in the paragraph above point the way to a type of educational process that is of profound significance to engineering. The possibilities of expanding the undergraduate program are nonexistent; it needs pruning and simplifying. A longer undergraduate program than the present four years is open to weighty practical objections. Specialized training for the majority of engineering students cannot begin with profit until the man has become oriented to the early stages of his career, and it cannot be given to good advantage apart from actual experience. Resident graduate work immediately following the undergraduate program can meet the needs of a minority only. The possibilities of an orderly post-scholastic training, on the other hand, are fairly unlimited, provided there can be a linking up of educational effort in industry with extension activities of colleges in strategic centers. The development of such an educational process may well engage the efforts of the professional engineering societies. The award by colleges of "professional"

<sup>40</sup> C. S. Coler. Graduate Study in the Engineering Schools. *Journal of Engineering Education*, N.S., 18:144, October, 1927.

<sup>41</sup> A Study of Engineering Teaching Personnel. *Society for the Promotion of Engineering Education. Investigation of Engineering Education Bulletin*, 4, October, 1926; also in the *Journal of Engineering Education*, N.S., 16:299-323, December, 1925.

degrees may be associated with supplementary educational attainment through these means; the terms of award may well be determined jointly by the colleges and the professional societies, and these two agencies may well unite in evaluating the evidences of attainment.

*Organized research in engineering colleges.* The following summary indicates the extent of organized research activities in the engineering colleges in the academic year of 1924-1925:<sup>42</sup>

|   |           |
|---|-----------|
| Institutions in active research without special funds . . . . . | 9         |
| Institutions having annual research funds                       |           |
| Appropriated by the state or province . . . . .                 | 18        |
| Appropriated by the college . . . . .                           | 35        |
| Obtained from other sources . . . . .                           | 28        |
| Total appropriations  |           |
| From states and provinces . . . . .                             | \$256,025 |
| From college funds . . . . .                                    | 467,686   |
| From outside sources . . . . .                                  | 661,553   |
| For United States and Canada . . . . .                          | 1,401,264 |
| Institutions having research staffs                             |           |
| Full time (38 institutions) . . . . .                           | 273 men   |
| Part time with compensation (42 institutions) . . . . .         | 349 men   |
| Part time without compensation (37 institutions) . . . . .      | 305 men   |
| Total number of publications issued to June 1, 1925 . . . . .   | 1,658     |
| Total number of projects in progress, June 1, 1925 . . . . .    | 568       |

Imposing as these totals are, it may be noted that the total expenditure is but 5 per cent of the sum spent for undergraduate instruction, and is less than 1 per cent of the total expenditure on industrial research in the United States. Furthermore, there are at least four industrial concerns in the engineering field, strictly defined, which spend individually for these purposes more than the total of all engineering colleges. The American position is in striking contrast to that of Europe, where, notwithstanding great advances in research under industrial auspices, the universities and higher technical schools are still regarded as the chief centers for the advancement of the art. The American problem, at the bottom, is one of personnel. We have not yet seriously undertaken to make a career of teaching and investigation permanently attractive to the most fertile and creative minds of the engineering profession.

<sup>42</sup> Edward Bennett. Seminars for Practising Engineers. *Journal of the American Institute of Electrical Engineers*, 45:996-998, October, 1926.



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## CHAPTER VIII

### THE FINE ARTS: MUSIC, ART, AND ARCHITECTURE

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#### INTRODUCTION

The advantages to be gained from a study of the fine arts are unequaled. Preëminent among them is the association with the most complete and finest expression of man's life and history. The vistas of the past become the byways of the present, and the centuries live again in our midst. No longer is our sight limited to our immediate surroundings; no longer are our associates and friends only those of the day and place. The beauty of the ages is spread before us; the companionship of the true princes of the earth is ours.<sup>1</sup>

It is evident that these lines refer to the study of the appreciation of the arts of the past rather than to the present-day study and training which produces our painters and architects, and, in music, our composers and performers. Until recently such study and training was deemed unfit to be ranked with university training in general. The result was that artists of all ranks received their training at the hands of private teachers, in conservatories, in ateliers, and in the special schools, which, in this country at least, were strictly commercial organizations. A narrow and one-sided education was the inevitable result. Creative artists and performers alike were regarded as ignorant and uneducated except in their art. This was true of many. But who was at fault — the artist who was denied the privilege of broad training at a university or the university which denied him the training he needed, and in many cases wanted?

The educational value of such training was for a long time denied. Technique in painting, design, and composition and in the performance of music were regarded as "skills" demanding little or no mental capacity. Particularly was musical performance regarded as a form of manual training or of sleight-of-hand. It was not realized that

<sup>1</sup> American Institute of Architects. Significance of the Fine Arts. Marshall Jones Company, 1926.

technique in any art is only a means to an end; that without technique there is no art as we know it today, and that to acquire an adequate technique means great concentration, long and careful application, and a discipline of the mental and physical powers of the student. In music, fine technical performance is absolutely necessary, for music cannot exist without it. Music does not exist except as it is actually performed. The performer must perforce stand between the composer and the hearer. Therefore the careful training of the performer is an important duty which should be shared by the universities.

Art — its creation or its performance — not only depends upon fine technical training, but, when properly taught, it trains its devotees in discipline, concentration, originality, discrimination, individuality, taste, sincerity, quality rather than quantity, and in a lasting devotion to an impelling ideal. Surely all these have their educational values.

It is true that examinations must differ from the examinations in academic subjects, but it is also true that these examinations can be made a more exacting test of knowledge and ability than examinations in almost any other subject. "Cramming" is absolutely impossible, a "pony" is useless, and cheating is out of the question. The student knows or he doesn't know, he can do or he can't do, and he can neither give nor receive help. The student of the fine arts soon realizes this, and learns to do for himself, knowing that anything else is impossible.

Art education in the universities is not wholly given over to those desirous of becoming professional artists. In fact, such training should be available only to a small group of talented students who have had the advantage of special preparation. The much larger group of students from the other schools of the university, who are being trained to become leaders in our everyday life, need to have at least an elementary knowledge of the arts, for they will constantly be coming in contact with them in business, in the home, in church, in practically all civic enterprises, and in all social intercourse.

One of the most prominent qualities in the personality of an individual is his standard of taste. He reveals this in everyday life, first, by his clothes and his personal appearance, and then by his attitude toward and his appreciation and understanding of all manifold products of art that surround him on every hand. If he has no proper sense of beauty, color, proportion, or the suitability or fitness of things, he is adjudged to be coarse, crude, uncultured, or unrefined, and he cannot possibly express his reactions to these things without revealing his standard of bad taste.<sup>2</sup>

<sup>2</sup> George C. Nimmons. *Need of Art Training in College and its Application in After Life*. *United States Bureau of Education. Higher Education Circular*, 27, October, 1923.

The idea that the fine arts are an unimportant "adjunct to the life of persons of leisure" or for women alone is a most pernicious one. The fine arts at their best are ageless and universal. To understand and appreciate them should be a part of everyone's education. Scientists, inventors, statesmen, business men, and even college presidents and clergymen have openly deplored the fact that with their college training they were given no idea of the power and universality of the fine arts. No doubt the universities, rather than they themselves, were at fault.

Caroline Hazard, former president of Wellesley College, in her book "From College Gates," fittingly sums up the case for education in the fine arts :

A person may see a beautiful object, and, in endeavoring to reproduce it in drawing on paper, fail absolutely for want of proper training. Another may be greatly impressed with the power of some harmony, and be entirely unable to reproduce any portion of the effect when sitting at a piano. Training, then, not only in the perception but in the reproduction of beauty, is a most essential thing. This would seem to lead the way to several distinct forms of training which are most desirable to pursue. The arts, of course, must have their full share, — music and painting and the art of speech, — and all these arts, when once they possess the mind with anything like a true inspiration, will find their own expression through the personality of the individual, who thus becomes in his own way a creative artist. . . . The student who has even begun on such a course of training, who can see beauty in everything in the created world and in the realm of thought, has certainly begun to be beautiful in himself. For beauty most truly passes into the person who studies the beautiful. No one can give out what he does not have to give. He must first absorb beauty at the great natural reservoirs and fountains of the beautiful before he himself can become truly beautiful in life and character, and so able to transmit beauty to all around him. . . . The study of any art leads into the dim recesses of time and opens the vistas of the future from an historical point of view. Much profitable work may be spent on the history of the art of music; and some general knowledge of this subject is indispensable to the musical student. But more important as a principle is the study of musical form. Until one has an appreciation of the musical sentence, its development, its branching out into related themes, its recurrence and final return in a glorified form, which marks the best classical work, there can be no intellectual grasp of structures. This conception, once obtained, unlocks storehouses of beauty. . . . There is nothing which is more conducive to humility of mind than the study of art in any form.

In closing this introduction it should be noted that the fine arts can be *enjoyed* without study of any kind. One can derive pleasure from looking at pictures or at a beautiful building, or in listening to music. But one cannot *appreciate* and *understand* them without study and

thought. Every art has its emotional and its mental side. The emotional side can be enjoyed by anyone who is emotionally sensitive to beauty in sound, color, or proportion. But the mental side reveals its secrets only to those who are willing to give thought and study to it. The greater the amount of study the finer and more satisfying the appreciation and understanding become.

### STANDARDIZATION OF CURRICULA IN THE FINE ARTS

As artists are highly individualistic, it has been very difficult for them to agree upon a standardized course of study or upon a standardized subject matter in any of the special subjects taught. In this regard, no doubt, architecture fares best. The American Institute of Architects, through one of its committees, has arranged a standard course of study for colleges and universities. In music, the National Association of Schools of Music, organized in 1922, has recently issued a standardized course of music study for colleges and universities, together with entrance requirements for such courses. In art, very little along this line has been done. The Carnegie Foundation, interested in the training of teachers of art history and appreciation, has made a cursory study of the situation upon which it is basing the aid it is offering to various institutions.

Owing to the state of flux in which education in the fine arts finds itself, very little literature on the subject is procurable. The number of books on the subject is not more than a dozen. The magazine articles consist of statements of personal opinion rather than studies based on some form of systemized survey.

In this chapter we shall attempt a short survey of such studies as have been made, and a statement of the most recent practices in fine-arts education.

### OBJECTIVES

The objectives of university training in the fine arts are three in number :

1. In music, the professional training of composers, performers, and teachers ; in art, of painters, sculptors, designers, illustrators, and teachers of art ; and in architecture, of architects and teachers of architecture.

2. The training of the music or art amateur, who desires to bring his talent to fruition in a nonprofessional way, by means of a combination of technical and cultural study.

3. The training of the music or art lover, that he may make one of the large number of those who not only enjoy music, art, or architecture, but understand and appreciate it by reason of a study of its periods, structure, and salient features.

Of the three phases of training, the first should reach and affect the smallest number; but the training should be intensive and complete, or the student faces failure upon his emergence from the university into professional life.

The second objective should reach an increasing number of students, the most of whom (generally students from some other college of the university) are studying music or art as a minor subject.

The third objective should reach the largest number of students, because no technical training is necessary and a relatively short period of time is sufficient for the gaining of an appreciation of the fine arts.<sup>3</sup>

#### STANDARD ENTRANCE REQUIREMENTS

*For objective 1.* It will readily be seen that no one set of entrance requirements will prepare students for all three objectives, and that the entrance requirements must depend upon the professional course to be followed. As is the custom with all universities, fifteen units should be the standard for entrance. For objective 1 there should be a minimum of twelve academic units, as follows:

|                                |                |
|--------------------------------|----------------|
| English . . . . .              | 4 <sup>4</sup> |
| One foreign language . . . . . | 2              |
| Algebra . . . . .              | 1              |
| History . . . . .              | 1              |
| Science . . . . .              | 1              |
| Electives . . . . .            | <u>3</u>       |
|                                | 12             |

*The piano, cello, or violin student* should pass an examination in three years' study of his instrument, and should show a thorough knowledge of the rudiments of music.

*The organ student* should pass the same entrance examinations in music as the piano student.

*The composition student* should pass examinations in two years of piano and two years of harmony.

<sup>3</sup> It should be noted that appreciation of art and that of architecture are customarily combined in a single study.

<sup>4</sup> New York State allows but three units for four years of high-school English.

*The voice student* should pass examinations in the rudiments of music, one year of piano, and one year of voice.

The piano, violin, organ, or composition student passing the examinations noted above should be allowed three units toward entrance. The additional unit needed should be in some regular academic high-school subject.

*The art student* should pass an examination in one year of free-hand drawing or one year of mechanical drawing. The additional two units required may be in art or in academic subjects.

*The architecture student* should pass examinations in one year of free-hand drawing or mechanical drawing, one year of plane geometry, and one half-year of solid geometry. The additional half-unit required for entrance may be in an academic subject (preferably in mathematics) or in drawing (preferably free-hand).

The strict enforcement of the foregoing entrance requirements will result in the rejection of applicants from large high schools graduating students from art and music courses which allow the offering of four units in art or four units in music. Many of these schools are giving their music students thorough courses in harmony, sight reading, ear-training, and history of music, and their art students advanced work in crafts, design, modeling, and, in some cases, painting. Students thus prepared should be accepted without question; and the amount of academic and cultural subjects in the university course should be increased to make up for the deficiency in such subjects in the high-school training. Any other procedure would result in refusing entrance to the talented and well-prepared students for whom every university fine-arts department is looking.

*For objective 2.* As most of the students of this designation will be students in other schools of the university, desiring to study art or music as a minor to be offered toward a degree other than bachelor of music or bachelor of fine arts, the entrance requirements should be thirteen or fourteen academic units and one or two units in music or art. Students desiring to minor in music should also offer two years of piano, two years of violin, or, in the case of voice students, one year of piano and one year of voice. All music students should have a good knowledge of the rudiments of music. Students desiring to minor in applied art should offer one or two units in free-hand drawing or one unit in free-hand drawing and one year in mechanical drawing.

*For objective 3.* As no technical knowledge of either music or art is necessary for the study of music appreciation and history, or art appreciation and history, the regular entrance requirements of the college entered should apply.



## CURRICULA IN MUSIC

1. *Curricula leading to the Degree of Bachelor of Music*

The one hundred and twenty hours required for the degree of bachelor of music are generally apportioned as follows:

| For students of instrumental music :  | Hours    |
|---|----------|
| Major in instrumental music . . . . .   | 40 to 50 |
| Theory of music (harmony, counterpoint, form and analysis, canon and fugue, etc.) . . . . . | 15 to 20 |
| Sight reading and ear-training . . . . .  | 6 to 10  |
| Ensemble . . . . .  | 2 to 4   |
| Appreciation and history of music . . . . .   | 4 to 8   |
| Academic subjects (liberal arts) . . . . .  | 18 to 30 |

| For voice students :  |          |
|---|----------|
| Major in vocal music . . . . .  | 32 to 36 |
| Foreign languages . . . . .   | 12 to 24 |
| Theory of music (harmony, counterpoint, form and analysis, canon and fugue, etc.) . . . . . | 15 to 20 |
| Sight reading and ear-training . . . . .  | 6 to 10  |
| Appreciation and history of music . . . . .   | 4 to 8   |
| Academic subjects (other than foreign languages) . . . . .                                  | 8 to 12  |
| Vocal ensemble . . . . .  | 2 to 4   |

## Suggested curriculum in instrumental music :

|  |    |
|--|----|
| Piano, violin, organ, or cello <sup>5</sup> . . . . .  | 45 |
| Harmony . . . . .                                      | 10 |
| Counterpoint . . . . .                                 | 4  |
| Form and analysis . . . . .                            | 2  |
| Canon and fugue . . . . .                              | 2  |
| Composition . . . . .                                  | 2  |
| Sight singing . . . . .                                | 4  |
| Ear-training . . . . .                                 | 4  |
| English . . . . .                                      | 6  |
| History . . . . .                                      | 6  |
| Foreign languages . . . . .                            | 6  |
| English and American literature . . . . .              | 6  |
| Ensemble . . . . .                                     | 3  |
| Appreciation and history of music . . . . .            | 6  |
| Elective . . . . .                                     | 10 |
| Appreciation of fine arts (other than music) . . . . . | 4  |

For the piano student the ten hours of electives might well be taken in organ. The violin or cello student should take his electives in quartet or orchestral playing. The organ student might well take his electives in piano.

<sup>5</sup> Credit in applied music is estimated on the amount of required practice. Six hours of practice weekly gives two semester hours of credit. Fifteen hours of practice each week gives five semester hours of credit.

| Practical example of a curriculum in vocal music :     | HOURS      |
|--|------------|
| Voice . . . . .  | 32         |
| Harmony . . . . .                                      | 10         |
| Counterpoint . . . . .                                 | 4          |
| Form and analysis . . . . .                            | 2          |
| Canon and fugue . . . . .                              | 2          |
| Sight reading . . . . .                                | 4          |
| Ear-training . . . . .                                 | 4          |
| Piano . . . . .  | 8          |
| Vocal ensemble . . . . .                               | 4          |
| English . . . . .                                      | 6          |
| Foreign language . . . . .                             | 18         |
| History . . . . .                                      | 6          |
| Appreciation and history of music . . . . .            | 6          |
| Electives . . . . .                                    | 10         |
| Appreciation of fine arts (other than music) . . . . . | 4          |
|  | <u>120</u> |

The voice student might well take his electives in English and American literature and in public speaking.

Candidates for graduation who offer a major in instrumental or vocal music should be required to give a public recital of at least forty-minutes length during the second semester of the senior year.

| Practical example of a curriculum in public-school music : | HOURS      |
|--|------------|
| Public-school music (grades) . . . . .                     | 6          |
| Public-school music (high school) . . . . .                | 4          |
| Practice teaching . . . . .                                | 4          |
| English . . . . .  | 6          |
| English and American literature . . . . .                  | 6          |
| History . . . . .  | 6          |
| Public speaking . . . . .                                  | 4          |
| Psychology . . . . .                                       | 3          |
| Educational psychology . . . . .                           | 3          |
| History of education . . . . .                             | 3          |
| Principles of education . . . . .                          | 3          |
| Harmony . . . . .  | 10         |
| Counterpoint . . . . .                                     | 4          |
| Form and analysis . . . . .                                | 2          |
| Conducting . . . . .                                       | 2          |
| Instrumentation . . . . .                                  | 2          |
| Piano (or some other instrument) . . . . .                 | 12         |
| Voice . . . . .  | 12         |
| Sight reading . . . . .                                    | 4          |
| Ear-training . . . . .                                     | 4          |
| Appreciation and history of music . . . . .                | 6          |
| Vocal ensemble . . . . .                                   | 4          |
| Electives . . . . .  | 10         |
|  | <u>120</u> |

The electives might well be taken in the elementary study of orchestral instruments, acoustics, or additional subjects in pure education.

To enter into training for music composition the student should have a thorough knowledge of harmony and should show by examples that he has some originality in the composition of the song and small forms. He should also have had at least two years of piano training.

The student should be required to take the courses in advanced theory (counterpoint, form and analysis, canon and fugue, etc.) with the regular junior and senior classes, and should be given individual instruction in applying these subjects to his original work.

| Example of a curriculum in music composition :         | HOURS     |
|--|-----------|
| Counterpoint, elementary and advanced . . . . .        | 8         |
| Canon and fugue . . . . .                              | 6         |
| Form and analysis . . . . .                            | 2         |
| Free imitation and invention forms . . . . .           | 6         |
| Sonata and higher rondo forms . . . . .                | 6         |
| Instrumentation and score-reading . . . . .            | 6         |
| Larger forms . . . . .                                 | 8         |
| Ear-training . . . . .                                 | 6         |
| Foreign languages . . . . .                            | 12        |
| English . . . . .                                      | 6         |
| English and American literature . . . . .              | 12        |
| History . . . . .                                      | 6         |
| Appreciation and history of music . . . . .            | 8         |
| Instrumental ensemble . . . . .                        | 4         |
| Vocal ensemble . . . . .                               | 4         |
| Appreciation of fine arts (other than music) . . . . . | 2         |
| Piano . . . . .  | 8         |
| Electives . . . . .                                    | <u>10</u> |
|  | 120       |

Candidates for graduation should present for public performance compositions in the smaller and larger forms, including an overture, symphony, sonata, concerto, or cantata.

## 2. *Curricula for a Minor in Music*

Colleges are now permitting their students to offer from eight to forty hours in music toward the bachelor-of-arts or bachelor-of-science degree. Of those allowing from eight to sixteen hours nearly all require that the entire number of hours be offered in theory of music and appreciation and in history of music. Those allowing from sixteen to forty hours must perforce admit applied music to the list of music studies. Colleges admitting applied music to the list of subjects which may be offered toward their bachelors' degrees generally require of instrumental students approximately two years of instrumental study as preparation, and of voice students one year of voice and one year of piano as preparation.

| Suggested sixteen-hour curriculum in music :     |   | HOURS    |
|--|---|----------|
| Applied music (voice, piano, etc.)               | } | 8        |
| Harmony <i>or</i>                                |   |          |
| Appreciation and history of music                |   | 8        |
| Suggested twenty-four-hour curriculum in music : |   |          |
| Applied music (voice, piano, etc.)               | } | 8 to 16  |
| Harmony <i>or</i>                                |   |          |
| Appreciation and history of music                |   | 8        |
| Suggested thirty-hour curriculum in music :      |   |          |
| Applied music                                    | } | 16       |
| Harmony <i>or</i>                                |   |          |
| Appreciation and history of music                |   | 8        |
| Sight singing and ear-training                   |   | 6        |
| Suggested thirty-six-hour curriculum in music :  |   |          |
| Applied music (voice, piano, etc.)               |   | 16       |
| Harmony  |   | 8        |
| Appreciation and history of music                |   | 8        |
| Sight reading and ear-training                   |   | 4        |
| Suggested forty-hour curriculum in music :       |   |          |
| Applied music (voice, piano, etc.) <sup>6</sup>  |   | 16 to 20 |
| Harmony  |   | 8        |
| Appreciation and history of music                |   | 8        |
| Sight reading and ear-training                   |   | 6        |
| Instrumental or vocal ensemble                   |   | 4        |

## CURRICULA IN ART

### 1. *Curricula leading to the Degree of Bachelor of Fine Arts*<sup>7</sup>

With the exception of a few miscellaneous books and articles on the place of art study in a liberal-arts college, there is no literature on art curricula as they are offered in the art schools and in the art departments of a few colleges and universities. Each university is a law unto itself. In only a few cases have the universities attempted to offer thorough training and well-correlated courses in applied art, comparable to what is offered by the professional art schools. So it is with hesitation that the writer takes up the subject of art curricula for the professional training of painters, designers, interior decorators, illustrators, sculptors, and teachers of public-school art.

<sup>6</sup> Credits in applied music are granted on the required amount of practice. Six hours of practice weekly is usually estimated as worth two semester hours of credit, whether the number of lessons be one or two a week.

<sup>7</sup> In some universities the degree is specialized, — bachelor of painting, bachelor of design, etc.

The one hundred and twenty hours required for a degree in art are customarily apportioned as follows:

|  | HOURS    |
|--|----------|
| Major in applied art . . . . .         | 30 to 45 |
| Related applied-art subjects . . . . . | 30 to 40 |
| Art appreciation and history . . . . . | 10 to 16 |
| Liberal-arts subjects . . . . .        | 24 to 36 |

Suggested curriculum in painting:

|  |                         |            |
|--|-------------------------|------------|
| Major                                  | { Portrait . . . . .    | 20         |
|  | { Life . . . . .        | 15         |
|  | { Still life . . . . .  | 5          |
| Related applied-art subjects           | { Anatomy . . . . .     | 10         |
|  | { Composition . . . . . | 10         |
|  | { Sketch . . . . .      | 4          |
|  | { Perspective . . . . . | 1          |
|  | { Cast . . . . .        | 5          |
| Art appreciation and history . . . . . |                         | 10         |
| Liberal-arts subjects . . . . .        |                         | 30         |
| Electives . . . . .                    |                         | 10         |
|  |                         | <u>120</u> |

Semester credit hours in applied art are usually estimated on the basis of one hour of credit for three hours of studio work each week for one semester. Courses which demand some outside work are given one hour of credit for two hours of studio work each week for one semester. Anatomy and composition, with their multiplicity of original plates, to be drawn out of class, are ordinarily given two hours of credit for one hour each week in class. The academic rule of three hours of work each week for one semester, whether in or out of class, will hold good for all art work.

Suggested curriculum in design:

| Suggested curriculum in design :       |   | Hours      |
|--|---|------------|
| Major                                  | { Design . . . . .                              | 24         |
|  | { Anatomy of design . . . . .                   | 12         |
|  | { Cast . . . . .                                | 5          |
| Related applied-art subjects           | { Composition . . . . .                         | 8          |
|  | { Mechanical drawing . . . . .                  | 2          |
|  | { Sketch . . . . .                              | 4          |
|  | { Lettering . . . . .                           | 3          |
|  | { Still life . . . . .                          | 2          |
|  | { Crafts (metal, leather, clay, etc.) . . . . . | 9          |
|  | { Ornament . . . . .                            | 2          |
|  | { Nature drawing . . . . .                      | 2          |
|  | { Textiles . . . . .                            | 2          |
| Art appreciation and history . . . . . |   | 10         |
| Liberal-arts subjects . . . . .        |   | 30         |
| Electives . . . . .                    |   | 5          |
|  |   | <u>120</u> |

Very few universities offer adequate courses in sculpture, owing to the relatively small demand and to the difficulty of finding successful

instructors in this branch of study. The courses commonly demanded are as follows:

Suggested curriculum in sculpture:

|   | HOURS      |
|---|------------|
| Major { Life modeling . . . . .                                 | 15 to 20   |
| Major { Architectural sculpture . . . . .                       | 10 to 12   |
| Major { Antique modeling . . . . .                              | 6 to 8     |
| Related applied-art subjects { Cast . . . . .                   | 6          |
| Related applied-art subjects { Composition . . . . .            | 6          |
| Related applied-art subjects { Sketch . . . . .                 | 4          |
| Related applied-art subjects { Anatomy . . . . .                | 10         |
| Related applied-art subjects { Architectural ornament . . . . . | 4          |
| Related applied-art subjects { Perspective . . . . .            | 2          |
| Art appreciation and history . . . . .                          | 8          |
| History of architecture . . . . .                               | 6          |
| Liberal-arts subjects . . . . .                                 | 30         |
| Electives to complete 120 hours . . . . .                       |            |
|   | <u>120</u> |

Suggested curriculum in interior decoration:

|   | HOURS      |
|---|------------|
| Major { Interior decoration . . . . .                         | 32         |
| Major { Elements of architecture . . . . .                    | 4          |
| Major { Architectural drawing . . . . .                       | 6          |
| Related applied-art subjects { Descriptive geometry . . . . . | 3          |
| Related applied-art subjects { Cast . . . . .                 | 4          |
| Related applied-art subjects { Mechanical drawing . . . . .   | 3          |
| Related applied-art subjects { Composition . . . . .          | 4          |
| Related applied-art subjects { Perspective . . . . .          | 2          |
| Related applied-art subjects { Design . . . . .               | 5          |
| Related applied-art subjects { Furniture sketch . . . . .     | 3          |
| Related applied-art subjects { Ornament . . . . .             | 3          |
| Related applied-art subjects { Water color . . . . .          | 4          |
| Art appreciation and history . . . . .                        | 10         |
| Liberal-arts subjects . . . . .                               | 30         |
| Electives . . . . .   | 7          |
|   | <u>120</u> |

Suggested curriculum in illustration:

|   | HOURS      |
|---|------------|
| Major { Illustration . . . . .                          | 10         |
| Major { Life . . . . .                                  | 8          |
| Major { Portrait . . . . .                              | 12         |
| Major { Still life . . . . .                            | 4          |
| Related applied-art subjects { Composition . . . . .    | 12         |
| Related applied-art subjects { Lettering . . . . .      | 2          |
| Related applied-art subjects { Commercial art . . . . . | 2          |
| Related applied-art subjects { Ornament . . . . .       | 2          |
| Related applied-art subjects { Anatomy . . . . .        | 10         |
| Related applied-art subjects { Sketch . . . . .         | 5          |
| Related applied-art subjects { Perspective . . . . .    | 1          |
| Related applied-art subjects { Design . . . . .         | 2          |
| Related applied-art subjects { Poster . . . . .         | 4          |
| Art appreciation and history . . . . .                  | 10         |
| Liberal-arts subjects . . . . .                         | 30         |
| Electives . . . . .                                     | 6          |
|   | <u>120</u> |

It will be noted that major subjects in one curriculum may be minor subjects in another curriculum. A too great specialization along one line should be avoided. The courses outlined above will insure sufficient training in the major subject and at the same time afford a broad background of technical work as well as a good knowledge of art history.

The liberal-arts subjects will afford the student a fairly good knowledge of English, literature, history, and one foreign language. As a great number of standard books on art are written in French, this language should be required as a part of the liberal-arts work, unless the student has had three years of French in high school.

| Suggested curriculum in public-school art : |  | HOURS |
|---|--|-------|
| Major                                       | Public-school-art methods (grades) . . . . .         | 6     |
|   | Public-school-art methods (high school) . . . . .    | 4     |
|   | Basketry, pencil, blackboard, etc. . . . .           | 4     |
|   | Design . . . . .                                     | 8     |
|   | Practice teaching . . . . .                          | 4     |
| Related applied-art subjects                | Cast . . . . .                                       | 6     |
|   | Still life . . . . .                                 | 4     |
|   | Portrait . . . . .                                   | 6     |
|   | Life . . . . .                                       | 6     |
|   | Pen and ink . . . . .                                | 2     |
|   | Crafts (metal, leather, paper, book, etc.) . . . . . | 6     |
|   | Lettering . . . . .                                  | 2     |
|   | Composition . . . . .                                | 6     |
| Art appreciation and history . . . . .      |  | 10    |
| Liberal-arts subjects . . . . .             |  | 30    |
| Pure education . . . . .                    |  | 12    |
| Public speaking . . . . .                   |  | 4     |
|   |  | 120   |

Those preparing to become teachers of appreciation and history of art in colleges and normal schools should be well grounded in applied art. Technical training, even without an original creative capacity, is an essential part of art understanding and certainly of art criticism.

| Suggested curriculum in the history of art :  |  | HOURS    |
|---|--|----------|
| Major in art appreciation and history . . . . .   |  | 20 to 30 |
| Archæology . . . . .  |  | 6        |
| Liberal-arts subjects . . . . .   |  | 30 to 40 |
| Psychology and education . . . . .  |  | 9        |
| Applied art (cast, sketch, composition, anatomy, perspective, design, life, etc.) . . . . . |  | 35 to 50 |
| Electives to complete 120 hours   |  |          |

Because the student should have a good knowledge of history and literature before taking up the serious study of art appreciation and history, the work in applied art might well be done in the freshman

and sophomore years, and the work in art appreciation and history in the junior and senior years. The basic English and history courses should be taken during the first two years, leaving the psychology, education, and foreign languages to the second two years.

## 2. Curricula for Students from Other Colleges

*For objective 2.* In a number of universities sixteen hours in art may be offered toward the bachelor's degree in arts and science. The usual division of these credits is as follows:

|  | HOURS |
|--|-------|
| Applied art . . . . .                  | 8     |
| Art history and appreciation . . . . . | 8     |

Should the number of permitted hours be increased to twenty-four, the division might well be as follows:

|  | HOURS    |
|--|----------|
| Applied art . . . . .                  | 12 to 16 |
| Art history and appreciation . . . . . | 8 to 12  |

Very few universities permit more than twenty-four hours in art to be offered toward the traditional bachelor's degree. Where it is done the credits in art history and appreciation should not go above sixteen. The rest of the total amount permitted should be in applied art. The courses in appreciation and history should be given during the second two years of the course.

*For objective 3.* No courses in applied art are necessary, although a thorough course in elementary cast and design would go far in helping the student to understand the problems of line, mass, space, and proportion. The courses in appreciation and history should be given in the junior and senior years.

## CURRICULA IN ARCHITECTURE

### *Curricula leading to the Degree of Bachelor of Architecture*

Through the influence of the American Institute of Architects curricula in architecture are fairly well standardized. Architecture is more often taught in the college of engineering than in the college of fine arts, but as the writer's subject is fine arts, he will limit his discussion to architecture in the college of fine arts. As a rule one hundred and sixty hours are demanded for graduation. If the student comes with no work in advanced mathematics, in free-hand drawing, or in mechanical drawing, it is practically impossible for him to com-



plete the work in four years. In this event a five-year course is generally offered, in which from one hundred and eighty to one hundred and ninety hours are required for graduation. The extension to five years reduces the work in courses from an average of twenty hours each semester, demanded in the four-year course, to an average of eighteen hours in the five-year course. The student of average ability should take the five-year course, leaving the four-year course to the mature student of more than average ability.

The one hundred and sixty hours demanded for the degree of bachelor of architecture may be apportioned as follows:

|  | HOURS    |
|--|----------|
| Major { Elements of architecture . . . . .   | 4        |
| Architectural design . . . . .   | 40 to 50 |
| Constructive problems . . . . .  | 10 to 12 |
| Related architectural subjects { Butress and arch . . . . .                          | 2        |
| Masonry, carpentry . . . . .   | 8        |
| Mechanics of materials . . . . .   | 3        |
| Trussed roofs . . . . .  | 2        |
| Reënforced concrete . . . . .  | 2        |
| Foundations . . . . .  | 2        |
| Heating, lighting, ventilation, sanitation . . . . .                                 | 4        |
| Analytic geometry . . . . .  | 6        |
| Calculus . . . . .   | 3        |
| Mechanics . . . . .  | 3        |
| Mineralogy . . . . .   | 3        |
| Specifications, contracts, superintendence . . . . .                                 | 2        |
| Shades and shadows . . . . .   | 2        |
| Free-hand drawing (various mediums) . . . . .  | 14       |
| Composition . . . . .  | 4        |
| Stereotomy . . . . .   | 2        |
| Perspective . . . . .  | 2        |
| Office administration . . . . .  | 2        |
| Summer work (at least two summers in the office of a registered architect) . . . . . | 4        |
| History of architecture . . . . .  | 8        |
| Fine arts (other than architecture) . . . . .  | 4        |
| Ornament . . . . .   | 2        |
| English . . . . .  | 6        |
| French . . . . .   | 12       |

In case the student has had at least three years of French in high school, another academic elective (preferably in mathematics) might well be substituted.

The subjects in the five-year course are practically the same as in the four-year course. The average semester schedule is eighteen hours instead of the twenty in the four-year course. More time is given to free-hand drawing or to mathematics, according to the entrance credits

offered. The work in elements, orders, and architectural design, of the first two years of the four-year course, is spread over the first three years of the five-year course. A few academic courses, such as physics, geology, and history, may be offered to make up the required number of hours.

*Objective 2.* Rarely does a student from another school in the university wish to carry architecture as a minor subject. Architecture is so highly specialized that the student takes either the entire course or none at all. The amateur architect is a rarity.

*Objective 3.* As a rule appreciation of architecture is included in any general course in the appreciation and history of the fine arts. A few universities offer special courses in history of architecture and elements of architecture to students of other colleges. From four to six hours in history of architecture and four hours in elements of architecture will cover these subjects adequately.

### COMPETITIONS

Practically all first-class departments of architecture in this country are correspondents of the Department of Architecture of the Beaux Arts Institute of Design, 126 East 75th Street, New York City.

Advance problems in architecture are periodically sent to the Beaux Arts in competition with problems from other schools or for grading. Prizes and awards are given. In some classes of competition the grading of the school from which the problems are sent depends upon the grading of the Beaux Arts. This practice insures a uniformity of work and of judging work not obtained in any other form of art study. The result is that Class A departments of architecture are attracting practically all students of talent and ability, and are graduating each year architects exceptionally well trained and ready to do their part in making architecture one of the respected professions. The average grade of training in schools of architecture is, for these reasons, above that generally to be obtained in schools of music or of art.

### EXAMINATIONS

As is the case with academic subjects, written examinations in music, art, and architecture may be graded by the individual teachers. In applied music, art, and architecture the examinations should be given and the grading done by the entire faculty of the department.

For example, the piano student should be examined and graded by the entire piano faculty; the portrait student should be examined by

the entire painting faculty. In case the number of students is very large, the examining and grading can be done by committees of not less than five members chosen from the faculty. This method of conducting examinations tends to secure a uniformity in grading and does away with all suspicion of personal prejudice on the part of the individual teachers.

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## CHAPTER IX

### THE SCHOOL OF LAW

By ROSCOE POUND, Dean of the Law School, Harvard University

#### ENGLISH AND COLONIAL BACKGROUND OF AMERICAN LEGAL EDUCATION

In any consideration of legal education in the United States we must begin by noting that in Great Britain and in continental Europe the legal profession is officially organized and officially specialized by differentiating the function of advocacy, or representation of clients before tribunals, from the function of agency, or representing clients out of court, preparing their cases, looking generally after their legal affairs, investigating titles for them, and preparing their legal documents. Indeed, in continental Europe the specialization goes much further. There the judicial career is especially chosen from the outset, so that there is distinct training for the agent, for the advocate, for the judge, and even for the teacher of law. Great Britain does not go as far. The judges are taken from the higher, or advocate's, branch of the profession. But the profession is divided. In England the advocates, called barristers, are organized in immemorial societies, the Inns of Court, which control the training, admission, and discipline of the bar, subject to a certain supervision by the courts. The agents, called solicitors (formerly called attorneys in the courts of law, solicitors in the court of chancery, and proctors in the ecclesiastical courts, or courts of probate and divorce, and the court of admiralty), are organized through incorporated societies, of which the chief, the Incorporated Law Society, has control of examinations, of issuance and renewal of certificates, and the initiative in discipline. In Scotland the upper branch (advocates) is organized in a society called the Faculty of Advocates, which controls training for and admission to the bar. The lower branch (writers to the Signet, solicitors) are organized in two corporations, — the Society of Writers to the Signet and the Society of Solicitors, — which in the same way control training and admission and are responsible for discipline. In Ireland the profession is organized substantially as in England.

Not only is the bar in Great Britain centralized at the capital in England, Scotland, and Ireland respectively, but the whole administration of justice is so centralized.

In continental Europe the advocates are set off from the agents in the same way, and the branches of the profession are organized in self-disciplining societies. But there the primary agencies of legal education are the faculties of law in the universities.

Thus it is possible to speak of a bar, a legal profession, a system of legal education, for these countries. There are definitely organized professional societies; there is one, definitely organized, or even centralized, system of education for those who proceed to the several branches of the profession through admission to these societies. We cannot speak of a bar or a profession or a system of legal education in the United States in any such sense. With us the profession is undifferentiated, unorganized, and decentralized. There is no general plan of professional education. With respect to admission to practice, each jurisdiction is a law unto itself. In recent years there has been some degree of centralization in the different states by committing the examination of applicants to some central commission or board under the control of the highest court of the state; but this is not universal, and there are all degrees, from a close central organization of those examinations to an almost complete localization of admission to practice before each particular tribunal.

These things are due in part to our legal history and in part to social and economic conditions in the formative era of our institutions. In England the bar had grown up in the centralized courts at Westminster. In this country a system of admitting lawyers to practice grew up before local tribunals, long manned not by professionally trained lawyers but by clergymen or soldiers or farmers. Moreover, for a long time review of local decisions was had before legislatures or before the chief executive. The first American law book was a book on practice before magistrates. It should be remembered that the English law which we brought to this country was chiefly a land law and a law of procedure. The chief need, when our courts and our legal profession were formative, was to have practitioners competent to carry on a litigation in court under the complicated, formal, overrefined procedure which obtained down to the middle of the nineteenth century. The leaders of the profession were trial lawyers and could best learn what was needed for successful advocacy before juries and lay magistrates by actual practice. Thus an apprentice system was entirely adequate to the training of lawyers for that era.

Several factors operated to perpetuate the system of training for

and admissson to practice law which grew out of colonial conditions. In a country of magnificent distances and an age of slow modes of travel, the exigencies of pioneer communities called for local courts of general jurisdiction at every man's back door. The apprentice training and lack of libraries in most of these local jurisdictions led to a development of local law and local procedure which fitted well with pioneer ideas of local autonomy and decentralization. In particular they led to an overdevelopment of local procedure. Hypertrophy of procedure became characteristic of American law. This overdevelopment of procedure was aggravated by the circumstance that the American pioneer community was apt to be a cave of Adullam. Every one that was in distress, and every one that was in debt, and every one that was discontented, gathered themselves there<sup>1</sup>; and they were not minded that their creditors should pursue them. Their chief protection against the pursuing creditor was an involved, dilatory procedure, permitting many opportunities for decision of causes on points of practice rather than on the merits. Thus our frontier communities carried further the overdevelopment of procedure which they had inherited, and the lawyer who had a rule-of-thumb knowledge of local practice seemed to be the best trained for the purposes of the time and place. Later the development of railroads and public-service companies, with continual litigation over accidents and claims incident to their enterprises, led to the organization of legal departments and to the rise of the professional defendant's lawyer and his correlative, the professional plaintiff's lawyer. As the leadership of the profession passed from the trial lawyer to the railroad lawyer the tendency to put the main stress upon technicalities of legal procedure was accentuated. Such technicalities were the best weapon in the armory of the habitual defendant's lawyer, and legislation went on increasing the procedural pitfalls in the way of the litigant from the Civil War almost to the close of the nineteenth century.

#### AMERICAN BACKGROUND

To these factors we must add the hostility to the professional idea which obtained in the era of Jeffersonian democracy. The pioneer distrusted specialists. He was necessarily versatile and had faith that any man was equal to anything. Hence the practice of law was not merely decentralized, as indeed it had to be for American purposes; it was unorganized in any real sense and was largely deprofessionalized.

<sup>1</sup> See I Samuel xxii, 1-2.



The tendency was to look upon it as merely one of many money-making callings. All this led us to take the lower branch of the profession for our model. The American practitioner is "Attorney and Counselor at Law," first place being given to the agent function. The result is that we have no bar in the English sense. There is simply an aggregate of so many lawyers, of all degrees of education, with no organization beyond such voluntary associations as certain practitioners choose to form or to adhere to, and with no uniform standards of admission or training obtaining for the whole country.

With the shifting from a pioneer, rural, agricultural society to an urban, industrial society, which has gone forward so rapidly in the present century, certain changes have been taking place, and more changes and more rapid changes are certain to come. The tendency to centralize admission to practice in each state has been spoken of. Also, in the last quarter of the nineteenth century a tendency to voluntary organization of the better elements of the profession in bar associations arose and has made much headway. Also, a certain spontaneous unofficial differentiation and specialization has been going on, particularly in metropolitan centers, and it is significant that commercial practitioners have come to have their own national association. A few states have incorporated the lawyers who practice in their tribunals, and agitation for organization is in the air. Likewise the American Bar Association is pushing effectively for a uniform and higher standard of education and for the development of the professional idea and the maintenance of professional standards. Out of these things an American system of organization and education of the profession must grow in time. But as things are we must recognize that there are so many lawyers, of all sorts, rather than a bar, and that there are many varieties of training preliminary to entering upon the practice of law rather than any entity which we may call American legal education.

Necessarily the objectives, the methods, and the form of legal education in the United States have been determined in large measure by the foregoing historical conditions. But two other factors have operated to develop a characteristic American teaching of law for those who choose to avail themselves of it, which has gone a long way upon independent lines. These are (1) the influence of our universities, which, since 1817, have developed academic law schools giving more and more a scientific training in law without regard to the statutory requirements for admission to practice, and (2) the demand for well-trained young men on the part of law offices in our large cities, which has led increasing numbers to attend the university law schools and

prepare for the better law offices instead of merely preparing for the examinations for license to practice. Moreover, except in a few rural communities it has ceased to be possible to carry on an apprentice training in law offices. The law office of today is a business organization in which there is little or no place for the student apprentice. Nowadays the very great majority of those who enter the practice prepare in some sort of law school. These schools are of three distinct types.

#### TYPES OF AMERICAN LAW SCHOOLS

First, there are the schools which keep to the objectives of the old apprentice training. In our larger cities the great bulk of those who come to the bar come from these schools. They emphasize the local procedure and the peculiarities of the local law. They aim to prepare simply for the local bar examinations. They exact the minimum of preliminary preparation which the local regulations call for, and are not at all exacting as to entrance requirements or to the grade of work done in the school. The teachers are mostly practitioners who give a part of their time to lecturing. Coaching for the bar examinations is a chief item in the course. Sometimes these schools have a nominal connection with some local institution of learning. Frequently they are independently incorporated, and often they are primarily money-making enterprises.

Second, there are schools which stand midway between the first type and the university law schools. Sometimes they are in transition from the one type to the other. Dependent largely or chiefly upon tuition, they cannot put their standards far above those set locally for admission to the bar examinations. Dependent chiefly upon the locality for their students, they cannot get far away from a purely local training in the mechanics of local procedure and the peculiarities of the local law. Dependent chiefly upon local practitioners for their teachers, they cannot get wholly away from the methods and aims of the apprentice training. But they are conscious of better things and put their standards for admission definitely above those of the local bar examinations, lay as much emphasis as they can upon the national and supernational aspects of the law, and go as far as their resources will permit in the direction of modern methods of scientific training. Usually schools in this category pass gradually into the third type.

Third, there are the university law schools, — those which are truly parts of important universities. Usually these have more or less of independent endowment or, in case of state universities, assured public support. Thus they are largely independent of tuition, and have

broken away entirely from the aims and methods of the apprentice training. They seek to give a general professional training in a scientific spirit and by scientific methods. They expect the student to attend to preparation for any local bar examination in his own way and on his own initiative. They exact a high entrance requirement in the way of preliminary education and enforce it rigidly without regard to what the local bar examinations call for. They expect the student to look up local peculiarities for himself on the basis of his general legal knowledge, and devote their efforts to the legal system of English-speaking peoples as a whole and to the development of that system in the United States. They exact a high standard of scholarship and of qualification for their degrees. Their teachers give their whole energies to instruction and to the work of the school, and thus are able to use the best methods, which usually make heavy demands upon instructors. They have adequate libraries in which students have access to something more than the everyday tools of the local practitioner.

Nothing need be said as to the objectives, the entrance requirements, and the professional curriculum of schools of the first type. Yet, before we take up these points with reference to the third type, we must note the reciprocal effect of our legal institutions on our legal education (taken at its best), and of our legal education (in all its forms) upon our legal institutions.

### HISTORICAL OBJECTIVES OF LEGAL EDUCATION

In general, legal education runs along two lines: the apprentice line, derived from England, and the academic line, derived from the law schools of the Eastern Roman empire in the fifth century, and so said to be derived from Rome.

English legal education began, like the English bar itself, in the spontaneous organization of groups of students, studying as apprentices under masters. In the Middle Ages social institutions in Western Europe were close to a kin-organized society. Every art and craft and trade and profession organized, as a matter of course, as a brotherhood. Thus the law students had a common life, a common table, and immemorial societies on the model of a group of brethren. In origin the students were apprentices. But the rise of university teaching of law in twelfth-century Italy, followed by an academic teaching of Roman law and the canon law throughout Western Christendom, was not without effect on the teaching of law in these societies. On the whole, however, they preserved the professional element, with little development of an academic element; and when, from the seventeenth

century onward, the breakdown of the relationally organized society of the Middle Ages, and the rise of an individualist, competitive-economic society caused the old legal education to decay, apprentice training of barristers, in the chambers of special pleaders, conveyancers, and practicing barristers, came to be the real education of the bar. The solicitors had always been apprentice-trained. Thus, when legal education began in this country, it took the form of apprentice training as a matter of course.

Until the setting up of Judge Reeves's law school at Litchfield, Connecticut, in 1782 or 1784 (the exact date is not clear), American law students learned by serving an apprenticeship in the office of a practitioner. Before the Revolution a few had gone over to the Inns of Court. Also, for more than a century after Judge Reeves's school (the first American law school), students went on preparing in this way, and still do so to some extent. Judge Reeves's school was in origin a law office, but it was one in which the teaching function predominated. The teachers were practicing lawyers; but they organized the teaching part of their work, laid out a regular course divided into topics, and dictated lectures on each topic, so that, in the days of few libraries and almost no law textbooks, each student could carry away a series of lectures on the main heads of the law, amounting to a workable set of texts. This is the prototype of the apprentice-method schools of the last century and is the beginning of one side of all American legal education.

On another side American legal education derives from the establishment of the Vinerian professorship of the Laws of England at Oxford in 1758, and the publication (1765) of Blackstone's "Commentaries," the lectures of the first Vinerian professor. Professorships and lectureships on the model of Blackstone's chair at Oxford were set up in many American institutions of learning. Noteworthy are one established by the state of Virginia at the College of William and Mary (held by George Wythe from 1779 to 1780), one at the College of Philadelphia (now the University of Pennsylvania) (held by James Wilson in 1790), one at Columbia College in 1793 (held by James Kent), and the Royall professorship at Harvard, established in 1815. The latter still exists, having been joined to the law school established at Harvard two years later. In 1817 Harvard conceived the idea of uniting a school of Judge Reeves's type, conducted by a practicing lawyer under the auspices of a university, with the professorship on the model of Blackstone's chair, and thus gave us the beginnings of the American university law school. But it was not until Story became Dane professor at Harvard, in 1829, that the fusion of these two lines

of legal education produced something distinct, namely, the academic-professional school as we know it today.

On its professional side this type of school goes back to English professional training in the Inns of Court. On its academic side it goes back, through Blackstone, to the university training of lawyers which has prevailed on the Continent since the twelfth century. English law was a law of the courts. Hence a professional education was the natural response. Continental law came to be a law of the universities. Thus an academic education came to prevail. American law in the nineteenth century was, in form and in authoritative origin, the work of courts; but in reality it was the work of courts and legislators guided by jurists and text-writers, the chief of whom were teachers or lecturers in law schools. Accordingly there was a strong academic element, and the natural result was an education in which the training is professional and yet is carried on in the academic spirit by university teachers. Thus it will be seen that if the history of our law during our formative era gave us the deprofessionalized, unorganized body of practitioners, as it exists today, and if the apprentice training, appropriate to such a body of practitioners in a pioneer society, had much to do with the overdevelopment of procedure which is so irritating a feature of our administration of justice in the industrial society of today, yet the reflex action, as one might say, of our legal institutions upon legal education led to the American university law school, an institution of its own kind, out of which, we may well hope, will come the means for delivering American justice from its difficulties.

#### GENERAL OBJECTIVES OF AMERICAN LEGAL EDUCATION

Apprentice training has for its objective a learning of the rule-of-thumb methods of the lawyer's office, of the art of drawing the necessary papers in a litigation, of the art of investigating titles, and such knowledge of the general institutions, principles, and conceptions of the law as will enable the student to learn thoroughly those local statutes which have to do with everyday law business, and to learn the rules established by the decisions of the local courts. Differentiation of local law came gradually from the middle of the eighteenth century to the time of the Civil War, and, as has been said, was accentuated by the prevailing apprentice training of lawyers. It is true that such a training as was given in Judge Reeves's school was for many purposes available in any part of the land, but the whole tendency of the apprentice education was in the other direction.

When Joseph Story took charge of the Harvard Law School in

1829, he announced a purpose of legal education which has come to govern in our university law schools. He conceived a national rather than a local school, — treating questions of law as wholes, not in local fragments, taking them up as parts of a system of Anglo-American law, looking at the experience of administration of justice among English-speaking peoples as a unit, and so measuring local peculiarities by the principles and conceptions of a general law. He went farther and compared these principles and conceptions with those of the Roman law and of the modern law of continental Europe. This way of looking at law grew immediately out of the rationalism of the eighteenth century. But transition from rationalism to the historical standpoint of the nineteenth century was already in progress and is marked in Story's teaching. Indeed, in his "Commentaries on the Constitution" the transition is complete from a contract basis of rights and contract basis of government, on the basis of pure reason, to a historical basis, confirmed by a constitution which declares natural rights with a historical content. When law was looked at in this way, academic teaching became inevitable.

In Story's school the objective was stated thus: "The design of the Law School is to afford a complete course of legal education, except in matters of mere local law and practice, for gentlemen intended for the bar in any of the United States." Langdell, in 1871, broadened the statement to read: "Such training in the fundamental principles of English and American law as will constitute the best preparation for the practice of the profession in any place where that system of law prevails." In other words, the objective is preparation for practice wherever the common-law system obtains, this preparation taking the form of study of the common legal materials of English-speaking peoples in order to understand the institutions, the modes of thought, the received ideals, the authoritative technique, and the fundamental conceptions of Anglo-American law.

Judges, lawmakers, law writers, jurists, and teachers, in the Anglo-American polity, come from the bar. Hence it was assumed that training for the bar was a training for the things to which the bar led. This was largely true in the simpler social and economic order of the last century, but today much more specialization is called for. We must now add two further avowed objectives, to be seen as distinct, although inseparably connected with the first; namely, the training of legal scholars from whom jurists, law writers, and teachers of law may be recruited, and the scientific investigation of problems of legal adjustment of human relations and how to meet them effectively.

## OBJECTIVES IN DETAIL

We must look more in detail at the first of these objectives.

Apprentice training of lawyers and the education derived therefrom assume (1) an art of conducting legal proceedings, drawing legal papers, and giving legal advice which is to be learned by imitating a master, and (2) a mass of arbitrary rules, rules which are authoritatively prescribed, even if they have an ultimate basis in reason, which are to be learned by reading the books. But this conception of law as an aggregate of rules is erroneous and misleading. Law is much more than a mass of simple, definite precepts attaching definite detailed consequences to definite detailed states of fact. If we consider only the precept element of law, it is much more complex. Along with rules there are principles; that is, authoritative starting points for legal reasoning where no definite detailed results are prescribed for definite detailed states of fact, but where, instead, there are premises from which to deduce such rules for cases not covered by existing rules. Also there are legal conceptions; that is, defined categories in which to classify particular situations of fact so that, once a set of facts is referred thereto, a series of rules and principles become applicable. Likewise there is another type of precepts which enjoin conformity to certain legal standards, and the definition and application of these standards has become one of the most important and difficult tasks of modern law.

This precept element varies from place to place and from time to time. On the whole, legal precepts are relatively short-lived. Rules of law seldom survive more than a generation. Old ones continually become obsolete or are superseded, and new ones constantly spring up or are enacted. No body of precepts can hope to cover the whole field of human relations in detail. The body of authoritative precepts must constantly be eked out, and when, in times of growth, this process necessarily goes on upon a large scale, the methods and ideals of the old apprentice training break down conspicuously. Indeed, this has been manifest in the present generation in the slowness of response of American law to the needs of transition to an urban, industrial society.

A second element in a body of law is a traditional technique of finding, in the mass of legal precepts, both statutory and traditional, the grounds of decision of controversies and of solution of legal problems. It is a technique of developing the grounds of decision of particular cases out of the authoritative legal materials, of shaping precepts to meet new situations, and of working out from the whole body of rules,

principles, conceptions, standards, and institutions the precepts appropriate to the situation here and now. This element is the art of the lawyer's craft. In its simplest applications it could be learned by the apprentice method, but in the complex legal system of today the materials must be organized scientifically and criticized analytically, historically, philosophically, and with reference to the several social sciences; and these things are beyond the reach of an apprentice training.

Nor is this all. There is a third element in law, namely, a body of received ideals of the social order; a body of received ideals of what law is and what law is for, and so of what legal precepts ought to be and how they ought to be applied. These ideals are the background of all judicial action, whether in finding the law, or in interpreting it, or in applying it. They give content and form to legal precepts, and dictate their application. English and American lawyers have been wont to ignore this element and to look exclusively at the element of legal precepts. But to understand law, to administer justice according to law, and to make law, we must have a firm grasp of all three elements.

It follows that there are things which a university law school may do best, which are an essential part of the training of the lawyer in a country in which political institutions are legal institutions and the constitution itself is a legal document. But there are other things that go to make up the equipment of the lawyer which a university law school may not expect to do well, — which may be learned better in the law office. The law school should seek to give its students a grasp of the method of organizing the precept element of the law, a grasp of the analytical, historical, philosophical, and sociological critique of the authoritative legal materials, a thorough acquaintance with the traditional technique of the common-law lawyer and a developed power of applying it, and an understanding of the received ideals of Anglo-American law, with a well-considered critique of them in the light of the social sciences. The rest of the work of preparation must be left to other agencies.

#### ENTRANCE REQUIREMENTS TO THE BAR

A survey of the requirements for admission to the practice of law in this country, as they obtain in forty-eight states and the District of Columbia, shows the greatest diversity, and the diversity in fact is even greater than appears on paper. These requirements have been a gradual growth. After some attempts, in colonial times, to organize



admission to the profession along English lines, there succeeded, in the era of Jeffersonian democracy, a period of indifference in which the matter was left to take its own course in each jurisdiction, and even in each locality. It was not until the present century that the American Bar Association began to take steps toward a standard system for all our states. Moreover, the different local systems of admission to practice took shape in the era of apprentice training and presupposed a bar brought up in the office of practicing lawyers and serving a period of clerkship. As the shift from a profession so trained to a profession trained in law schools has gone forward the local systems, devised originally with reference to reading or clerkships in law offices, have been modified, added to, and patched up to meet the exigencies of the rise of law schools; but until quite recently the apprentice-trained element at the bar has so far predominated that the inclination has been to treat law-school training of lawyers as something exceptional, to which doubtful concessions were made,—as a substitute for the sort of training in which the mass of the profession believed. In the present generation there has been an entire change of attitude, but this change has gone further in some parts of the country than in others. As a result it can hardly be said that there is a consistent, well-worked-out scheme anywhere. Thus, a generation ago it became necessary for the university law schools to begin to go their own way in the matter of admission to candidacy for their degrees, just as they had done in the matter of what they should teach and how they should teach it, leaving it to bar associations to move for adjustment of the requirements for admission to practice to the improved conditions of legal education.

Looking first at the requirements for admission to the bar, we can now say with substantial truth that, except for exemption of graduates of certain law schools in some jurisdictions, everyone who aspires to practice law must undergo at least some sort of examination conducted under public authority. Formerly four states made admission to practice law a matter of right for every person of good moral character, without regard to professional training or knowledge. But only one state now adheres to that policy, embedded in its constitution, and even there a system of optional examinations, at the initiative of local bar associations and promoted by the state bar association, has developed, and in effect brings pressure upon all applicants to submit thereto. For the rest, all but seven jurisdictions now conduct examinations under a central authority, uniform for the whole state. Two jurisdictions still adhere to the older system of independent local examinations, each going its own way and varying

with the views and temper of the examiners for the time being. One state somewhat modifies this plan by consolidating the local examinations into three geographical subdivisions, while three more centralize the examinations under the direction of the highest court of the state, but do not provide for any continuity or uniformity by setting up a permanent board or commission. As a hold-over from the old system of apprentice training it is generally assumed that ability to pass such an examination sufficiently evidences all that needs to be required as a prerequisite of admission.

As to the period of legal study required to precede the taking of the examinations, nine states (all but two of them Southern) make no provision; one state demands a year; one, eighteen months; six, two years; fifteen and the District of Columbia, three years; while fourteen make three years of study of law a minimum, exacting more under certain circumstances. As to what education shall precede this period of legal study, fifteen make no requirement. Seventeen impose requirements as to general education, but permit it to be acquired along with the study of law, so that in some, at least, of these jurisdictions it has been possible for applicants to work eight hours a day at their money-making vocations, obtain "the equivalent of a high-school education," and put in the required years of legal study concurrently in the minimum time. The remaining jurisdictions (seventeen) demand that the preliminary education be complete before the study of law is begun. Most of the states now call for no more than a high-school education. Many do not exact even that. Two now demand one year of college training, and five demand two years. The latter is the standard of the American Bar Association, adopted in 1921.

#### REQUIREMENTS FOR ADMISSION TO LAW STUDY

In contrast with this diversity and even laxity in the state laws or rules governing preparation for the practice, a clear policy has grown up in the university law schools and has led to standards now codified, as it were, in the requirements of the Association of American Law Schools. As they now read, the Articles of Association prescribe that in order to be eligible to membership a law school "shall require of all candidates for any degree, at the time of the commencement of their law study, the completion of one half of the work acceptable for a bachelor's degree granted on the basis of a four-year period of study by the state university or the principal universities or colleges where the law school is located." Many university law schools now go beyond this. Some require three years of college study as a preliminary. Sev-

eral provide a combined course in arts or science and law, whereby the college degree and the professional degree may be taken in six years. A few exact graduation in arts or science, or the equivalent degree, as an absolute minimum. Recently the Harvard Law School has raised this requirement still higher, exacting graduation from an approved college with an "approved record," interpreted to mean that in the case of first-list colleges the applicant must have ranked in the first half of his class, and in the case of second-list colleges in the first fourth.

There is no doubt that in the past many law schools have been kept from putting their entrance requirements where they should have been by the backwardness of the official requirements for admission to the bar. The majority of law schools have been unendowed or inadequately endowed and have had to depend chiefly upon tuition. Some have been regarded by the university authorities as means of making money for general university purposes. Thus too often they have been in no position to exact much more than was demanded by the statutes or rules governing access to the bar examinations. The moment they raised their requirements, money-making law schools sprang up, with no expensive libraries to maintain, and with the minimum entrance requirements loosely enforced. More than once it has happened that such institutions have drawn off students to such a degree as to impair the efficiency of good schools striving to exact and to maintain high standards and to provide requisite facilities. Happily, experience has shown that, on the whole, and in the end, the great majority of the better students will go to the better school in spite of or even because of its higher requirements. The university schools which have consistently gone forward without waiting for advance in the bar requirements have been rewarded by the steadily-growing attendance of well-prepared students, and have seen the profession begin to move toward their standards.

There are many reasons for the backwardness of the official requirements as to preliminary education. For one thing, the pioneer faith in versatility dies hard. It has long been an article of faith that any honest citizen was equal to any task, legal, political, or administrative, as indeed he had to be in the pioneer community. A people brought up in this faith is not easily persuaded that the new social and economic order makes demands in the way of special training for the professions which would have been unreasonable a generation ago. Such considerations have been reënforced by the democratic idea. It has been thought that any distinction between the trained and the untrained, between the competent and the incompetent, was invidious and in

some way a class distinction. Thus the hostility to lawyers for economic reasons in the years following the Revolution, and the resulting throwing of the practice open to everyone, has received a false interpretation in terms of democracy. Moreover, we must not forget that the practice of law is a highroad to political preferment, and that the public is not unreasonably cautious about limiting political opportunity by limiting admission to the main avenue thereto. It cannot be denied, however, that less justifiable agencies play no small part in maintaining the state of affairs which has come down from pioneer, rural, agricultural America. The pressure from money-making schools and even from publishers who are selling large numbers of cheaply made books to hordes of ill-prepared students is no mean factor in the situation in too many jurisdictions.

Undoubtedly requirements might be pushed too high, though there seems little likelihood that this will happen. Coming to the profession too late in years involves a loss to the community as well as to the individual; yet the age at which students now come to the bar from the leading university law schools (twenty-five) is exactly the age at which they are able to enter the profession at their best. Professional training of the kind demanded by the law today is wasted upon immature students, and the law school has enough to do in its immediate tasks without having to add tasks of teaching its students how to study in the academic spirit and how to work with first-hand materials, and without having to give them the historical, social, and economic background upon which effective legal education must more and more be projected. The bar gives us our judges, our legislators, the interpreters of our constitution, our advisers upon the multitude of political and social and economic questions which in our polity are made questions of law. It is futile to expect judge and lawmaker and lawyer to do well this vital part of their work in American society of today unless they have studied law with the apparatus which only the colleges can give them, and have been guided by teachers adequately trained, working with adequate facilities, and teaching the science of law in its setting among the social sciences. Such teaching is indispensable, but it would be lost upon those who are not prepared for it.

#### BACKGROUND OF THE PROFESSIONAL CURRICULUM

In the university law schools, the curriculum has gone through three stages. At first the schools prescribed a list of books to be read by the student, supplementing these readings by general lectures which, in

the beginning, seem to have been taken down verbatim by the student and used afterward as a textbook when he went into practice. This was useful before there were many textbooks and before the days of modern facilities for finding with assurance the decisions and authorities on any given point. It was a development of the apprentice method. In a second stage the schools taught from textbooks, for the most part from the practitioners' textbooks, which began to appear in large numbers in the first half of the nineteenth century. Most of these textbooks grew out of the lecture-teaching in the apprentice type of school and the fusion therewith of academic lectures on law upon the model of Blackstone's lectures at Oxford. Chief among them were Judge Story's books, the outcome of his tenure of the Dane professorship at Harvard. They had a decisive influence in the making of American law and were used by student and practicing lawyer alike. Later in this stage, as the books for practitioners tended to become mere indexes to the authorities, textbooks designed specially for students began to be published, and the instruction of this stage departed still further from the apprentice type. But apprentice training and the fusion of that training with the system of academic lectures on law left one mark upon legal education. The academic lectures had taken the form of a general survey of the legal system, as, for example, Blackstone's "Commentaries" and Kent's "Commentaries," or a philosophical, political, and historical introduction to American law, as, for example, in Wilson's "Law Lectures." In the apprentice training, so far as it was systematized, such books were read first, and then the several practitioners' textbooks on special topics. Out of this grew the curriculum beginning with a course on "elementary law" and followed by courses on special topics, each on the basis of some textbook, which obtained widely in American law schools until the latter part of the last century. In this stage instruction was carried on after the method of the American college of the time. There was a fixed curriculum, covering the whole field of the law, and teaching from textbooks, with a certain amount of set lecturing, went on as in college. Notable schools of this type were Harvard under Parsons, Washburn, and Parker in the 50's and 60's, and Michigan under Cooley and his colleagues a decade later. Textbook teaching reached its highest development under Dwight at Columbia in the 80's.

After the Civil War came a period of legal stability which called for an organizing, systematizing, legal science in place of the creative, legal thinking which had been called for in the formative era. Analytical and historical jurisprudence superseded the philosophical jurispru-

dence which had come to us in the eighteenth century. The legal materials had greatly increased in bulk. There had been a steady growth of local law. Books written for practitioners had ceased to be useful instruments for teaching, and those which were beginning to be written for students were apt to be over-simple and dogmatic. The time was ripe for a further departure from the apprentice training, and the next stage was marked by Langdell's introduction of teaching from the sources, commonly known as the "case system." Introduced at Harvard by Langdell in 1870, it was not until 1890 that it began to make headway elsewhere; but in another twenty years it had made its way into substantially every university law school in the land. It was a method of critical, analytical, and historical study of the original and authoritative legal materials, by classroom discussion and brief expositions growing out of the discussion, with a view to acquisition of the fundamentals of the Anglo-American legal system and of the technique of the common-law lawyer at first hand.

One result of this method of instruction was the better systematizing of the several departments of the law which is now bearing fruit in the restatement of the law going on under the auspices of the American Law Institute. It has kept to the plan of separate courses in the several topics which grew up in the second stage; but the time has not yet come to abandon that plan in legal education. For system must be brought into the details and into the special fields of the law before it can be brought into the law as a whole. The same thing happened in the modern Roman law. The Glossators systematized the individual texts one by one. Next the Commentators put system into each title. The system of the law as a whole begins with the Humanists and reaches its full development at the end of the nineteenth century. In our law we are no more than ready to make the beginnings of system in the common law as a whole. It is significant that the restatement by the American Law Institute is going on independently, subject by subject. For a long time to come, law will have to be taught in that way because it will exist in that form.

#### METHODS OF INSTRUCTION

A word as to the method of study from decided cases in comparison with the Continental method of lectures on the basis of academic commentaries on authoritative texts and academic doctrinal treatises. The modern Roman law is adapted to the latter type of teaching. It is a university-made law. It is formulated in codes and legislative texts, and in its technique doctrinal writings have authority. From

the beginning its technique has been one of developing and applying written texts, and its oracles have been teachers and academic commentators, not judges. Such a method is not consistent with the genius of our legal technique, which has a wholly different history and has been developed by wholly different agencies. The common law is not a product of the universities. From the beginning it has been a product of the courts. The great names of English law are the names of judges, not of teachers. Indeed, it used to be true that a textbook of the common law was of no persuasive authority and might not be cited unless written by a judge. With us the law is formulated chiefly in the opinions of the judges. Textbooks and commentaries have no authority. Our technique is one of developing and applying reported judicial experience of the administration of justice in concrete cases. The teaching of law is primarily a teaching of the traditional technique of logical development of legal materials and of reaching grounds of decision of particular cases therefrom. In English-speaking countries the technique to be taught is a lawyer's technique of applying the materials to be found in the law reports, not a teacher's technique of applying texts.

There has been a widespread misconception that under the so-called case system the student merely commits to memory the facts, the decision of the court, and the reasoning of the judges in each particular case read. Possibly, as this method has spread to all the schools, some may have abused it in this way; but in proper hands it is a use of the decisions, which in our law are the original and authoritative materials, as the basis of instruction. It is a study of these materials themselves rather than study of what others have said about them. It is a study of these materials in order, from them, to bring out the rules, the principles, the conceptions, the standards, and the technique of applying them through concrete trying out with reference to concrete cases instead of studying them as abstractions. Information as to the current rules for the time and place is fleeting. There must be a certain amount to serve as the basis of reasoning, but the purpose is to teach what is called "legal reasoning." Lord Coke called it "the artificial reason and judgment of the law, and not every man's natural reason." Hence by example, by discussion, by putting hypothetical cases for solution, by explanations or expositions on the basis of a series of cases or a group of problems, carried on throughout the year for each topic, the teacher seeks to direct or even to lead the student to do for himself, in his own way and with assurance, what the common-law lawyer must do whenever he is called upon to solve legal problems by means of our legal technique applied to our legal materials.

## PRESENT CURRICULAR PROBLEMS

With the development of teaching from the cases, the preliminary courses in "elementary law" have tended to disappear. System is learned through systematic teaching of each subject. The student is led to correlate the subjects as he studies them. Thus a system takes shape in his mind as it is built up naturally out of the materials of study, instead of his learning a system laid down for him dogmatically by someone else. It should be remembered that we have no authoritative system, as is the case in Continental countries governed by codes. Also, the student learns the terminology of the law as he goes along by referring to the law dictionaries and encyclopedias. He is not told in advance what legal terms mean, nor does he learn their meaning in advance in abstract definitions. As he encounters them one by one in his reading he looks them up for himself and thus comes to learn them in their concrete applications.

A fundamental principle of the curriculum in the university law school of today is to seek to do only those things which a law school can do best. No attempt is made to cover every topic in the law. The purpose is to cover thoroughly the fundamental subjects and certain special subjects in which a teacher can do more for the student than he can do by reading for himself. What he can do sufficiently by himself he is left to do in that way. Usually the first-year work is prescribed, but there is a considerable margin of election in the second and third years. This is necessary in a national law school, since some subjects are more important than others with respect to the local conditions in different parts of the country. Moreover, specialization in the practice is going so far that, to meet the demands from law offices doing different types of work, students preparing for one or another type require different courses after the fundamentals in the first year. It is no longer feasible to have a curriculum fixed in all its details, even for the purposes of a particular jurisdiction.

Not the least of the problems of legal education is to provide some substitute for the old-time contact of the student with the leaders of the profession, and the handing down of the traditional ideals and professional ethics of the bar, which were the best features of the apprentice training of the beginnings of American law. At Michigan attempt has been made to meet this problem by the Lawyer's Club, in which law students, practitioners, judges, and jurists are to be brought together in one institution, with a certain measure of common life, making the law student conscious, in his student days, that he is a member of a profession. Apart from this experiment



the tendency is to leave this side of the lawyer's development to the bar associations.

It remains to notice certain extracurricular activities which have come to be an important part of American legal education. In 1886 a group of students at Harvard founded the *Harvard Law Review*, a periodical published monthly during the school year of which a board of student editors have sole charge. There are no faculty editors, and there is no faculty supervision; but the teachers give advice and make suggestions when called for. The editors are chosen exclusively on the basis of their scholarship. No credit is given for work done upon the *Review*; it is done purely for its own sake. The *Law Review* quickly took high rank among legal periodicals, and today *Law Reviews* of the sort are an important feature of the work in all university law schools. In 1893 a group of students at Harvard began to do legal aid work under the direction and at the instance of Professor Wambaugh. In 1912 the Harvard Law School began to coöperate with the Boston Legal Aid Society. At Harvard this has led to a Legal Aid Bureau to which students are chosen on the basis of scholarship. The work is purely voluntary and is done for its own sake. In other schools, notably at Northwestern, this work has been developed as a "legal clinic" and forms part of the regular course. A third extracurricular activity is moot arguments. Such arguments were a part of medieval English legal education and became part of the prescribed work of American law schools. Some schools also developed "practice courts" for practice in procedure and in advocacy. This method was developed most successfully at Michigan. At Harvard the official moot courts fell out of use, and a system of voluntary law clubs grew up which conduct moot arguments as a voluntary exercise, without credit toward the degree. Substantially all the student body takes part in these clubs, and the arguments are organized in an elaborate inter-club competition extending over three years. Other schools are beginning to develop a similar system. The growth of these professional extracurricular activities, wholly voluntary and involving no credit toward the student's degree, but directly bearing on his education, is perhaps the healthiest symptom in our law schools of today.

#### GRADUATE WORK AND RESEARCH

In the past quarter-century it has been recognized that law teachers should have special preparation, and graduate instruction, leading to a doctor's degree, has been organized in many of the university law schools. This instruction is designed chiefly for the training of law

teachers, — both the training of graduates of law schools who intend to become teachers and the further training of those who already hold teaching positions and have permanently chosen law teaching as their life work. But usually it seeks to provide also for the further pursuit of the purely professional training afforded by the undergraduate curriculum and for special preparation for research. Instruction is carried on mostly in seminars or by independent study under the general direction of an instructor.

Also, in the past decade there has been a movement to organize in the law schools research directed toward the improvement of our administration of justice. It seems unlikely that we shall have public ministries of justice in English-speaking countries in the near future. Hence it is needful to turn to organized, systematic research in our universities, where alone conditions of effective work and guarantees of public confidence seem to be assured. The alternative is research under the auspices of privately endowed foundations. In either case there is assurance of security of tenure, adequate facilities, competent investigators, opportunity of dealing with problems as wholes rather than in detached local fragments, and scientific method and spirit. But the work of the privately endowed foundation seems less likely to inspire the needed public confidence. The universities, with their ample faculties of law, of medicine, and of arts and sciences, from which well-organized, effective institutes of research may be set up, afford the best opportunity. Today research for the improvement of the law and as the basis of legislation must be coöperative. The time has passed when any one scholar can be self-sufficient for these purposes. At Michigan research professorships have been endowed in connection with the Lawyer's Club. At Yale there is a plan of relieving professors of their teaching work from time to time by appointments to research professorships. At Harvard a large endowment for research in law has been raised, and research institutes are being organized, under the direction of permanent research professors, in which certain of the regular law teachers, relieved of part of their teaching, persons especially chosen for special types of work, members of other faculties, and graduate students, will coöperate. At Johns Hopkins there is now an Institute for the Study of Law, taking no students, and devoted solely to research. Properly qualified applicants are associated with the researches of members of the staff. But these are only beginnings, and it is too early to make confident or detailed statements.

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## CHAPTER X

### THE SCHOOL OF MEDICINE

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#### INTRODUCTION

Medical education in the United States today cannot be fully understood apart from certain phases of its development historically. Its present plane was reached only after long and continued effort. In this development a very significant determiner has been the American Medical Association.<sup>1</sup>

The convention which organized this association met in Philadelphia on May 5, 1847. As a basic principle of organization it adopted the policy of representation, making the voting members of the association a body of delegates from medical societies and institutions in a definite numerical ratio. From the beginning this organization concerned itself with the great issues of medical education. But, worthy as were its efforts, medical schools continued to multiply for many years, and low standards prevailed generally.

A survey made in 1847 of 972 physicians practicing in seventy-five towns and counties in Virginia showed that 678 had either graduated from some type of medical school or possessed some form of license to practice. Of the remaining 294, one had attended two courses of lectures, 10 had attended one course, and the rest, 283, were practicing without having pursued any form of systematic medical study.<sup>2</sup> This was representative of the country at large.

In 1882 of the more than 100 schools 22 required attendance on three or more courses of lectures; in 1886 the number had increased to 41; in 1889, to 47; and in 1890, to 64. The average lecture term in 1882 was 23.5 weeks, and by 1890 this period had increased to 26.3 weeks. In 1882 there were eight colleges which offered but 16 weeks in each of two terms.

<sup>1</sup> Reorganized and incorporated in 1901; sometimes referred to hereafter in this chapter as A. M. A.

<sup>2</sup> A. M. A. Transactions, 1848.

The first survey of medical colleges and medical education in America was published in the fourth annual report of the State Board of Health of Illinois.<sup>3</sup> Prior to this the only information available was contained in a few tables incorporated in the reports of the United States Commissioner of Education.

The seventh annual report of the Illinois board (1891) contained the most comprehensive survey of medical education up to that time, and the data therein contained constituted the basis for an evaluation of schools by the then existing (thirty-two) licensing boards.

In the 1891 report special attention is called to the fact that some of the universities of the country are providing college courses preliminary to the study of medicine. The report recommends arts-college preparation, although declining to indorse the strictly classical course as the best type of preparation for medical study. The report further mentions the fact that Harvard had made special provision under which students intending to study medicine might take a special A. B. course in three years. An attempt to establish a similar course at the University of Michigan failed (1889-1890).

### *Proposed Michigan Curriculum of 1890*

There were literally hundreds of plans proposed for the improvement of the medical curriculum, many proceeding from teachers in medical schools, some from medical societies,—local, state, and national,—some few from boards of health or bodies dealing with medical licensing, and some from individual physicians. Of all the plans suggested, the one which, in the light of present-day progress, most nearly approached the future needs and possibilities was that proposed by the faculty of the University of Michigan in 1890.

A study of the Michigan proposal is of unusual interest, for it reveals the fact that after nearly forty years of agitation the general plan of the curriculum of today is essentially that proposed by Michigan in 1890.

### COLLEGE OF ARTS. SCHEDULE OF REQUIRED COURSES

#### *First Year*

|                             |          |                                  |          |
|-----------------------------|----------|----------------------------------|----------|
| German . . . . .            | 4        | German . . . . .                 | 4        |
| French . . . . .            | 4        | French . . . . .                 | 4        |
| General chemistry . . . . . | 5        | Laboratory work in general chem- |          |
| Trigonometry . . . . .      | 3        | istry . . . . .                  | 2        |
|                             |          | English . . . . .                | 2        |
|                             |          | Mathematics . . . . .            | 4        |
|                             | <hr/> 16 |                                  | <hr/> 16 |

<sup>3</sup> Springfield, 1881.

*Second Year*

|                                 |           |                            |           |
|---------------------------------|-----------|----------------------------|-----------|
| German or French . . . . .      | 2 or 3    | French or German . . . . . | 4         |
| General biology . . . . .       | 5         | General biology . . . . .  | 5         |
| Physics . . . . .               | 5         | Physics . . . . .          | 5         |
| Qualitative chemistry . . . . . | 5         | Logic . . . . .            | 2         |
|                                 |           | Rhetoric . . . . .         | 2         |
|                                 | <u>18</u> |                            | <u>18</u> |

*Third Year*

|                                    |           |                                   |           |
|------------------------------------|-----------|-----------------------------------|-----------|
| Vertebrate morphology . . . . .    | 7         | Vertebrate embryology . . . . .   | 5         |
| Organic chemistry . . . . .        | 5         | Physiological chemistry . . . . . | 7         |
| Histology and physiology . . . . . | 3         | Electives . . . . .               | 2 to 6    |
| Psychology . . . . .               | 3         |                                   |           |
|                                    | <u>18</u> |                                   | <u>18</u> |

Students who enter the Department of Medicine and Surgery will not be recommended for a bachelor's degree until they have completed the required three years' work in that department. Those who desire to obtain the bachelor's degree in less than six years must remain in the Department of Literature, Science, and Arts and complete the required number of courses in that department.

## COLLEGE OF MEDICINE. SCHEDULE OF REQUIRED CREDITS

*Fourth Year*

|                          |           |                                   |           |
|--------------------------|-----------|-----------------------------------|-----------|
| Osteology . . . . .      | 3         | Descriptive anatomy . . . . .     | 3         |
| Materia medica . . . . . | 3         | Materia medica . . . . .          | 3         |
| Physiology . . . . .     | 3         | Physiology . . . . .              | 3         |
| Hygiene . . . . .        | 3         | Physiological chemistry . . . . . | 3         |
| Toxicology . . . . .     | 2         | Electrotherapeutics . . . . .     | 1         |
| Pharmacy . . . . .       | 1         | Medical jurisprudence . . . . .   | 2         |
|                          | <u>15</u> |                                   | <u>15</u> |

*Fifth Year*

|                                   |           |                                  |           |
|-----------------------------------|-----------|----------------------------------|-----------|
| Theory and practice . . . . .     | 2         | Theory and practice . . . . .    | 2         |
| Surgery . . . . .                 | 3         | Surgery . . . . .                | 3         |
| Diseases of children . . . . .    | 2         | Descriptive anatomy . . . . .    | 2         |
| Descriptive anatomy . . . . .     | 2         | Therapeutics . . . . .           | 2         |
| Therapeutics . . . . .            | 2         | Pathology . . . . .              | 2         |
| Pathology . . . . .               | 2         | Gynecology . . . . .             | 2         |
| Recitations on lectures . . . . . | 2         | Recitation on lectures . . . . . | 2         |
|                                   | <u>15</u> |                                  | <u>15</u> |

*Sixth Year*

|   |           |   |           |
|---|-----------|---|-----------|
| Theory and practice . . . . .                 | 3         | Theory and practice . . . . .                 | 3         |
| Surgery . . . . .                             | 3         | Surgery . . . . .                             | 3         |
| Gynecology . . . . .                          | 3         | Obstetrics . . . . .                          | 3         |
| Ophthalmology . . . . .                       | 2         | Ophthalmology, laryngology, otology . . . . . | 2         |
| Diseases of mind and nervous system . . . . . | 2         | Dermatology and syphilography . . . . .       | 2         |
| Dermatology and syphilography . . . . .       | 2         | Diseases of mind and nervous system . . . . . | 2         |
|   | <u>15</u> |   | <u>15</u> |

*Laboratory and clinical work* throughout the year in surgery, practice, ophthalmology, otology, diseases of the nervous system, gynecology, obstetrics, physical diagnosis, operative surgery and obstetrics, and minor surgery and bandaging.

This proposed course of study matches with unusual fidelity the plan now followed by most Class A colleges. It will be noted that embryology, physiological chemistry, histology, and physiology, which now find a place in the first medical year, were included in the third year of the arts college of the proposed Michigan curriculum.

### *Increase in Number of Schools*

In 1800 there were 4 active medical schools; by 1860 this number had increased to 66. During the Civil War period 20 schools suspended operations or ceased to exist. The period following the Civil War, 1866-1900, was a period of tremendous increase in the number of schools granting the M. D. degree, and by 1900 there were 160 such schools, which sent out, four years later, 5747 graduates—the largest number of qualified (?) practitioners of medicine ever graduated from the medical schools of this country.

MEDICAL SCHOOLS IN THE UNITED STATES

| YEAR | NUMBER | YEAR | NUMBER |
|------|--------|------|--------|
| 1800 | 4      | 1870 | 75     |
| 1810 | 6      | 1880 | 100    |
| 1820 | 12     | 1890 | 133    |
| 1830 | 21     | 1900 | 160    |
| 1840 | 33     | 1910 | 126    |
| 1850 | 52     | 1920 | 85     |
| 1860 | 66     | 1928 | 72     |

In the absence of active federal control over medical education, and in the absence of a federal medical-practice act, each state was privileged to fix requirements governing education and licensing.

Several things happened about 1890 that influenced medical education and inaugurated an era of marked improvement. First was the publication of the Seventh Annual Report of the Illinois Board of Health; second, the campaign of publicity inaugurated by the American Medical Association through its *Journal*; third, the reorganization of the Association of American Medical Colleges. In 1903 the American Medical Association formed a Council on Medical Education.

### *Council on Medical Education of the A. M. A.*

Since its organization the Council,<sup>4</sup> through the publicity given its reports, the proceedings of its annual conferences, and its classification

<sup>4</sup> "The Council" will be used in referring to the work of the Council on Medical Education and Hospitals of the A. M. A.

of colleges, has had a powerful influence upon the unprecedented progress made in American medical education. The first annual conference on medical education called under the auspices of the Council was held in 1905. At that time the minimum standard for students in schools in good standing was fixed at graduation from a four-year high-school course, followed by four years in medicine. A five-year course was recommended, the first year to include physics, chemistry, and biology.

### *First Classification and Inspection*

Some years earlier the *Journal of the American Medical Association* had begun the publication of state-board statistics giving the results of the state-board examinations of the graduates of the several colleges. From these reports something of the efficiency of medical education could be determined by the showing of graduates of a given school in the several state board examinations. These data furnished the Council with a preliminary basis for the grading of medical schools: Class I, including those schools with less than 10 per cent of failures; Class II, those with more than 10 per cent but less than 20 per cent; Class III, those with more than 20 per cent. In its report to the house of delegates of the American Medical Association in 1906 attention was called to the fact that poorly equipped and inadequately manned schools, particularly in five states, were responsible for pouring into the ranks of the medical profession large numbers of improperly trained physicians. There were at that time 15 medical schools in Illinois, 14 in Missouri, 10 in Tennessee, 8 in Maryland, and 7 in Kentucky — 54 schools in five states, with probably not more than 6 or 8 giving adequate instruction and training.

The plan of making a personal inspection of each of the 166 medical schools in the United States was then adopted, and the results of the inspection and reclassification were presented to the third annual conference on medical education held in Chicago in April, 1907. The efficiency of the medical training offered by a given school was determined by ten factors, ten grade points being allotted to each.

Schools rating above 70 were called acceptable and designated as Class A; schools rating between 50 and 70 were called doubtful and rated as Class B; schools rating below 50 were called unacceptable and rated as Class C.

The publicity given this report by the *Journal of the American Medical Association* proved more powerful in its effect than all the resolutions and legislation of the preceding century. Thirty-eight schools, in addition to those that had previously adopted the require-



ment, promptly agreed to require one year of preparatory work in college — including chemistry, physics, and biology — on or before 1910. Because of the refusal of many licensing boards to examine graduates of certain low-grade schools many of those institutions surrendered their charters and discontinued instruction.

### *Second Inspection. Flexner's Report*

The second inspection of the medical schools of the country, made in 1910, showed that instead of 166 schools there were 126 giving instruction. Coincident with the second inspection of the Council appeared the report on medical education of the Carnegie Foundation for the Advancement of Teaching, prepared by Abraham Flexner.<sup>5</sup> Mr. Henry S. Pritchett, in his introduction to the report, strikes the keynote of this able medical-educational document:

The significant facts revealed by this study are these:

1. For twenty-five years past there has been an enormous overproduction of uneducated and ill-trained medical practitioners. This has been in absolute disregard of the public welfare and without any serious thought of the interests of the public. Taking the United States as a whole, physicians are four or five times as numerous in proportion to population as in older countries like Germany.

2. Overproduction of ill-trained men is due in the main to the existence of a very large number of commercial schools, sustained in many cases by advertising methods through which a mass of unprepared youth is drawn out of industrial occupations into the study of medicine.

3. Until recently the conduct of a medical school was profitable business, for the methods of instruction were mainly didactic. As a need for laboratories has become more keenly felt the expenses of an efficient medical school have been greatly increased. The inadequacy of many of these schools may be judged from the fact that nearly half of all our schools have incomes below \$10,000, and these incomes determine the quality of instruction that they can and do offer.

Colleges and universities have in large measure failed in the past twenty-five years to appreciate the great advance in medical education and the increased cost of teaching it along modern lines. Many universities desirous of apparent educational completeness have annexed medical schools without making themselves responsible either for the standards of the professional schools or for their support.

4. The existence of many of these unnecessary and inadequate medical schools has been defended by the argument that a poor medical school is justified in the interest of the poor boy. It is clear that the poor boy has no right to go into any profession for which he is not willing to obtain adequate

<sup>5</sup> Abraham Flexner. Medical Education in the United States and Canada. Carnegie Foundation for the Advancement of Teaching. Bulletin No. 4, 1910.

preparation; but the facts set forth in this report make it evident that this argument is insincere, and that the excuse hitherto put forward in the name of the poor boy is in reality an argument in behalf of the poor medical school.

5. A hospital under complete educational control is as necessary to a medical school as is a laboratory of chemistry or pathology. High-grade teaching within a hospital introduces a most wholesome and beneficial influence into its routine. Trustees of hospitals, public and private, should therefore go to the limit of their authority in opening hospital wards to teaching, provided only that the universities secure sufficient funds on their side to employ as teachers men who are devoted to clinical science.

Dr. Flexner's report is by far the most powerful document bearing upon medical education, and it proved to be the most potent in the effect of its criticism and recommendations. Its publication came at a most opportune time, when medical educators and college and university authorities had been aroused by the Council to the existence of the deplorable conditions, and when the Association of American Medical Colleges had been stirred to a point where it was willing to do things, although frequently powerless because faculties repudiated the action of their delegates. The report was made only after personal inspection by Mr. Flexner of every school in the country, with such eminent fairness and with such prophetic vision that it appealed alike to the good sense of trustees of universities and to college executives. Many schools promptly surrendered their charters and expired; others consolidated with stronger schools in an effort to strengthen faculties and assets. There was a great rush for university affiliation, not perfunctory but real, and there was borne in on the consciousness of university presidents and trustees the fact that medical education must be done well or not at all. Constructive and consistent progress in American medical education dates from the publication of this report.

### *Conditions in Recent Years*

By 1915 the number of medical schools was reduced to 95,—66 in Class A, 17 in Class B, and 12 in Class C. By 1920 the number was still further reduced to 85,—70 in Class A, 7 in Class B, and 8 in Class C. By 1927 the total number was 80—71 in Class A (9 teaching only the first two years of medicine), 3 in Class B, and 6 in Class C.

The peak as far as number of medical schools is concerned was in 1904, with 166 schools, 28,142 students, and 5742 graduates. It was unavoidable that the increasing of the standards from no preparatory work in college to two years of preparation required by 30 colleges by

1912 should cause a drop in the number of students enrolled, and hence in the number of graduates. The low-water mark in the number of students occurred in 1919, when in approximately 80 schools there were 13,052 medical students; and the low-water mark for graduates occurred in 1922, with 2529 receiving the M. D. degree. Military service accounted in some measure for this reduction.

Although there has occurred the sharp reduction of 50 per cent in the total number of medical schools since 1904, increased facilities for instruction, including physical plants and additional and better-trained teachers, have enabled the schools to accept and enroll a number of students adequate to supply the country with physicians. The quality of the present-day output is noticeably superior. In 1928 the number of students had increased to 20,367 and the number of graduates to 4300.<sup>6</sup>

Owing to the restricted registration in most Class A medical schools, the query has been raised whether there are adequate opportunities for the medical training of students desiring to enroll. Studies undertaken<sup>7</sup> would indicate that there are sufficient places for all well-prepared, serious-minded students of good character. At this time there are a large number of duplicate applications for medical registration. In fact, it is a common practice with many students to apply to six or eight or more schools. There is a tendency on the part of medical-school authorities to scan the applications with considerable thoroughness in order to admit to the ranks of medicine only those students who are serious-minded, of sound character, possessed of fundamental honesty, and of sufficient intelligence to master the medical curriculum successfully. With evident justice the scholarship standard in many schools has been fixed at what is known as a 1.5 grade point average,<sup>8</sup> by some schools termed C plus, by others B minus, with the ruling that D grades in required subjects will not be accepted for entrance. Even with this admission standard, from 2 to 10 per cent of the students in the average school will be denied further registration as it becomes apparent that they are unable to carry the work with credit. In a few cases the applicant for medical registration is rejected, because the school has received confidential information that he is not mentally stable or that he lacks fundamental honesty. In the absence of compensating circumstances, rejections because of low scholarship are fully justified.

<sup>6</sup> *Annual Congress on Medical Education. Proceedings*, 1928.

<sup>7</sup> By Dr. B. D. Myers.

<sup>8</sup> One hour of A = 3; one hour of B = 2; one hour of C = 1; one hour of D = 0; the resulting sum divided by the total hours gives the grade point average.

## THE CURRICULUM

The medical curriculum naturally divides itself into three parts :

- I. Preparatory courses in college (the so-called pre-medical group).
- II. Basic science courses (pre-clinical).
- III. Clinical courses.

I. *Pre-medical Courses*

Pre-medical, or preparatory, training in college, to be completed before the student enters upon the medical course proper, is of comparatively recent development as applied to the great bulk of medical students. However, there have always been students who of their own initiative have completed courses in colleges of liberal arts before beginning the study of medicine.<sup>9</sup> As a result of the larger conception of medicine which has come about since 1910 there has been fixed by the colleges and recommended by the Council a minimum preparatory course of 60 semester hours, including the following required subjects : physics, 8 semester hours ; biology, 8 semester hours ; English, 6 semester hours ; chemistry, 10 semester hours ; and college electives, 28 semester hours. Although this is the minimum requirement that must be fulfilled by candidates for medical registration in colleges of Class A, many demand 65 hours, with additional required work such as one year of French or German, additional chemistry, and additional zoölogy. Some few require 90 semester hours, and two schools require a liberal-arts degree for medical entrance.

## PRE-MEDICAL CURRICULUM

*Required Group*

|   |                              |
|---|------------------------------|
| Chemistry (organic and inorganic)                           | } Minimum semester hours, 60 |
| Physics   |                              |
| Biology   |                              |
| English   |                              |
| Modern foreign language (at least one year in most schools) |                              |

*Elective Group*

|                      |                    |  |
|----------------------|--------------------|--|
| Chemistry (physical) | Economics          | } Many students present a total of from 70 to 90 hours |
| Sociology            | History            |  |
| Mathematics          | Additional English |  |
| Psychology           |                    |  |

The preparatory, or pre-medical, courses, as we have seen, were earlier incorporated in the medical curriculum proper. Because of the demand for more time for the study of courses essentially medical in

<sup>9</sup> See Report, pp. 458 and 461.

character, and the desirability of a broader academic foundation, preparatory liberal-arts courses, such as mathematics, chemistry (inorganic, qualitative, and quantitative analysis, and organic and physical chemistry), physics, biology (including comparative anatomy, parasitology, and genetics), French or German, advanced courses in English, psychology, sociology, economics, and history, have been demanded before medical entrance. For example, with the rapid development of the subject of biochemistry and its manifold clinical applications, time allotted to this subject necessarily had to be increased. This made necessary a better foundation in pure chemistry; hence the demand upon the college for increased instruction in inorganic, organic, and physical chemistry.

The language requirement of many schools — French or German — is considered by many educators as so much time wasted, inasmuch as a reading knowledge of either language can seldom be acquired by the average student with even two years of college instruction. It is urged that English abstracts of foreign literature in all departments of medicine are so readily available that the student is rarely compelled to seek the original article in the foreign tongue. The contrary opinion, however, holds that even one year of college French or German is of value to the student, because with a good beginning course he may acquire a practical reading knowledge of either language. Furthermore, the English abstract rarely conveys the full meaning of the foreign author. In fact, medicine is such a cosmopolitan science that not to be able to read current medical articles in at least one modern foreign language will handicap the real student.

The rôles of psychology, sociology, economics, etc. are being more strongly recognized as definitely ancillary to medicine. The student must gain the point of view that the patient is not an isolated individual, and that the management of his case must be that of a member of society. More and more the physician is becoming a vital social factor.

A generation ago few students entered the medical school with more than a brief course in secondary school physics. The applications of physics to medicine have become so numerous that the present eight-hour requirement of college physics is looked upon in many quarters as entirely inadequate.

It would seem self-evident that the two pre-medical college years now accepted as a minimum requirement are insufficient to give the student adequate preparation for medicine and at the same time afford him enough of a liberal education to serve as a foundation on which to build the superstructure of medicine. A far larger proportion of students each year are presenting for medical entrance not the mini-

60 to 65 semester college hours which are prescribed, but more nearly 90 semester hours from the group of elective subjects. Studies undertaken during the past few years show that between the 90-semester-hour student and the 120-semester-hour student (graduate) there is very little if any difference in power to master the medical curriculum successfully. Considerable difference is shown, however, both in thinking power and in ability to study, between the 60-semester-hour student and the 90-semester-hour student, the difference being strongly in favor of the latter.<sup>10</sup> Students find it difficult to meet, at the same time, the group requirements of the college of arts and the stipulated pre-medical requirements in less than three years (90 semester hours). It is argued that a student cannot master the subject matter or be trained in the ideals of a liberal education in 60 semester hours. On the other hand, many educators are agreed that the foundations of a liberal education may be laid in even less than 60 semester hours. Much will depend upon the type of teaching mind with which the student comes into contact. The stimulus and the direction given to study by a wise teacher are of far greater importance than the subject matter taught. After all, liberal-arts training is not, in and of itself, education. Education is something that is acquired by the individual student through his own effort. The student may be aided in forming habits of study by a real teacher, but unless thinking power is developed the objective of education is lost.

It is far more important, therefore, that the student should learn the method of study — the process of exact and logical thinking. He should at the outset acquire the biological point of view. It would be difficult indeed to outline a plan of training, in preparation for life, omitting the subjects of physics, chemistry, and biology. Furthermore, one fails to see the disadvantage to the student, even from a cultural point of view, of giving him at the very outset a purposeful objective. Chemistry, physics, biology, foreign language — all gain in the vigor of attack. The fact that the scholastic standard for admission to most medical schools would permit the acceptance of few more than one half of the students' graduating from colleges of liberal arts argues for an early defined objective.

## II. *Pre-Clinical Courses*

Probably no courses in the curriculum of liberal arts fit the student to do exact thinking, or aid him to acquire the method of experiment, quite so well as do the courses of the pre-clinical years.

<sup>10</sup> Wyckoff. *Association of the American Medical College. Bulletin*, January, 1927.

## PRE-CLINICAL CURRICULUM

1. Anatomy, including
  - a. Histology and organology
  - b. Gross anatomy
  - c. Embryology
  - d. Neurology
2. Physiology
3. Bacteriology
4. Pharmacology and materia medica
5. Pathology
6. Biochemistry

The subjects of the first two years of medicine are in a definite sense a continuation of the pre-medical courses of the college of liberal arts. In biochemistry the student builds definitely upon the pure chemistry of his pre-medical course. He should have acquired the power to think in terms of pure chemistry, and his course in biochemistry will use all the training acquired in inorganic, organic, and physical chemistry. His course in anatomy — gross anatomy, histology, embryology, organology, and neurology — is a definite continuation of his pre-medical zoölogy. In physiology he will use and build upon not only his courses in zoölogy, but also his courses in chemistry, using the added training gained in biochemistry.

In pathology he uses all of his preliminary biology, anatomy, chemistry, and physiology, and sees for the first time changes in cell and tissue structure — the results of disease. The experimental method is used in pathology as well as in the other subjects of the pre-clinical curriculum, and the student clearly visualizes the antecedent causes of cell and tissue changes.

Were the student to stop his training at the end of the two-year pre-clinical period, he would have received a sound training in the principles of biology, with a far wider conception of biological laws than could be secured under any other sequence of study. The course at this point, however, is designed to give the student fairly adequate preparation for applying his broader knowledge of biology to medicine.

The modern teaching of *anatomy* dates from Vesalius and the publication of his beautifully illustrated "Fabrica" in 1543. Even in Vesalius's time it was not an easy matter to obtain a body for dissection, and the anatomy of Galen which had come down through the centuries was the anatomy of animals — the pig, the ape, etc. Even later than Vesalius, Sylvius in Paris was lecturing on anatomy from the cadavers of dogs. The Italian universities, however, for two centuries before Vesalius, had fostered human dissection, numbering among their famous disciples of true anatomy Leonardo da Vinci,

who dissected human bodies as well as those of animals. From the time of Vesalius onward, anatomy of the human body gradually became a growing science. Few students dissected; they witnessed the demonstrations of the dissected material in what might be termed an anatomical lecture. It remained for William Hunter and his younger brother, John Hunter, to establish a private school of anatomical teaching in London,<sup>11</sup> in which private instruction was given in actual dissecting, and which many students from America attended during the last two decades of the eighteenth century. Required dissection on the part of students, in general was not a reality until the middle of the nineteenth century.<sup>12</sup> Many teachers, such as the Hunters and their successors in London, John Bell and his brother Charles in Edinburgh, and later Robert Knox in Edinburgh, conducted private classes, extramural in character.

In the absence of proper laws the bodies of criminals were used for anatomical purposes, and because of the demand for dissection material there sprang up a group of unscrupulous persons, known as resurrectionists, whose trade it was to secure recently buried bodies from graveyards and to sell them to the medical schools. Nearly every school, up until 1840 or 1850, had its threats of mob violence because of the rumors concerning the source of material for its laboratories of anatomy. Within comparatively recent years the United Kingdom, the provinces of Canada, and most of the states have enacted anatomical laws under which dissection may be conducted in properly constituted anatomical laboratories associated with medical schools.

Anatomy includes *histology*, *embryology*, *neurology*, *gross anatomy*, and *organology*. It is largely covered, except for gross anatomy, in the first two years of the medical curriculum. In the two clinical years the teaching of gross anatomy is continued with review courses, demonstrations, and correlation courses which serve to keep the subject ever present in the student's mind and greatly assist him in retaining a visual contact with this all-important subject. Many teaching aids have been drawn upon, notably skiagrams, models, carefully prepared dissections, charts, lantern slides, stereoscopic views, and cross and longitudinal sections of the entire body at various points. The course in gross anatomy in the clinical years is carefully correlated with the teaching of surgery.

<sup>11</sup> The Great Windmill Street school.

<sup>12</sup> On the founding of the first medical school in America (University of Pennsylvania) John Fothergill sent to the faculty a number of chalk drawings of anatomical dissections, to be used in instruction in anatomy in lieu of actual dissections.



At the outset the student must disabuse himself of the notion that he has completed or finished any single medical subject. This is particularly true of anatomy, and provision must be made during a large number of hours for open laboratories where the students may use available free time and elect additional courses or engage in review work.

Since gross anatomy is usually begun in the first medical year, the student sometimes receives a rude shock due to the necessity of acquiring *exact* knowledge. The method of generalization to which the student may be accustomed through careless pre-medical training must be wholly conquered if the student is to master a subject to which inexact statements are foreign. Correlation as a principle in academic teaching is of the greatest importance and is noted particularly in the teaching of the anatomy of the central nervous system. When this is taught in correlation with physiology the subject becomes interesting, fascinating, and readily mastered. Taught without this correlation it may become a mass of utterly unintelligible and confusing facts.

Anatomy is essentially the foundation of medicine; it is necessary to the understanding of physiology, pathology, medicine, and surgery, and at every point should be correlated with those subjects. It is the experience of most anatomical laboratories that graduate students looking toward surgery as a profession make extraordinarily good assistants because of their interest in explaining to the student the surgical principles involved in this or that structure of the body. Few complaints as to the ability of students to carry over their anatomy into the actual practice of medicine would be made if anatomy were taught as a sustained subject, that is, throughout the entire four years of the medical curriculum. Students too often hear little or nothing of gross anatomy after they leave the anatomical laboratory, and in some cases this is as early as the end of the first medical year. A thorough acquaintance with the structure (anatomy) and the function (physiology) of the body in health is essential if one is to determine correctly the causes and location of disease. There is no part of medicine that does not lean on anatomy as a supporting structure.

The importance of integrating and correlating anatomy with physiology has already been mentioned, and it is of equal importance that physiology should be as definitely and thoroughly correlated with medicine. While the formal course in physiology may end with the second medical year, the teaching and application of physiology to medicine must be continuous and serious, with the teacher of medicine as interpreter of perverted physiology. Students usually regard physi-

ology as the most fascinating subject of the medical curriculum — one in which they may apply the methods of exact science and ascertain the reasons for this or that behavior exhibited by the organism. If the student has acquired the power of applying physiological principles and physiological knowledge to a given case, symptoms otherwise inexplicable become intelligible and full of meaning. There would seem to be little reason for teaching physiology other than that which can be taught best from mammalian experiments.

Anatomy and physiology form, as it were, the pillars which support the whole structure of medical education. These sciences must be made the permanent intellectual property of the student. If physiology is taught as definitely preparatory to practical medicine, the interest taken by students in the unfolding of the science is greatly increased.

In the study of *pharmacology* the student receives his introduction to the treatment of disease. The subject itself is based directly upon and correlated with physiology and in the last analysis consists of the physiological interpretation of the action of drugs. The experimental method is used throughout the course, and every factor influencing the economy of the body, including internal secretions, sera, anti-toxins, and vaccines, is thoroughly presented to the student in the laboratory. In many schools therapeutics, at least an introductory course, is incorporated with the teaching of pharmacology. Such association leads to an early conception of the possibilities as well as the limitations of various forms of therapy. The number of calls upon the department of pharmacology by clinical clerks in outlining the therapeutic management of patients in the wards is suggestive of the importance of closely associating pharmacology and therapeutics. The reasoning-out of treatment or management, each step backed by sound pharmacological principles, aids greatly in the development of judgment. While pharmacology may have been taught as an abstract science — the pure physiology of drug action — the aim of modern teaching is to create therapeutic judgment on the part of the student, based upon sound pharmacological principles. The difference between the skilled use of digitalis and the crude empirical use of the same drug may mean the difference between life and death for the patient.

In order to bring about the highly desirable correlation between pharmacology and *therapeutics* the course will require the supervision and constant assistance of clinicians of the widest experience, particularly those of the department of internal medicine. Data obtained as a result of the measurement of the action of a drug on a laboratory experimental animal must be thoroughly correlated with the experience of an observant clinician.

The course in *bacteriology* is a continuation of the student's pre-medical biology, and emphasis is placed on the behavior of both pathogenic and nonpathogenic organisms as related to man. The principles of bacteriology are acquired at first hand by study in the laboratory, and the student becomes thoroughly familiar with the important advances in serology, immunology, methods of blood culture, agglutination tests, and the like.

The sequence of studies is so arranged that the student completes his studies in bacteriology before he takes up general and special pathology, the latter being illuminated by the experimental work that he has performed in his course in bacteriology. In most schools a portion of the time in the course in bacteriology is given to public-health problems involving the bacteriology of milk and water supplies and of general sanitation.

Actual changes in the cell or tissue structure of the body must be studied, so that the student may be capable of interpreting or measuring the amount of damage done at a given stage of illness, and so be able to outline a method of procedure designed to stop further tissue damage. Here again the subject of *pathology* must be thoroughly correlated with anatomy, medicine, and surgery. First of all, the student must acquire a groundwork of histological pathology; then and then only can come a visualization of the disease picture and its effect upon tissue, organs, and the body as a whole. In order to secure this knowledge the student carefully examines sections of diseased tissue, comparing them with normal sections of the same tissue. He sees wherein the two pictures differ, and studies the minute changes that have occurred throughout the abnormal tissue, as a result of this or that disease process.

The necropsy examination as the best plan for the teaching of gross pathology cannot be too emphatically stressed. Here the student familiarizes himself with the changes incident to disease which can be determined by naked-eye inspection. Changes in form, color, texture, size, resilience, the feel of the tissue, all come to mean disease of a definite character to the close student, and, when correlated with the clinical history of the case, indelibly fix in the student's mind the destructive effects of a given disease entity. In the teaching of pathology the instruction must be designed to explain in terms of perverted physiology what has occurred and why. In other words, the antecedent cause of tissue changes rounds out the picture and renders the teaching more intelligent and intelligible.

The pathological conference, with the students, the internes, the surgeons, the bacteriologist, the physiologist, and the biochemist all

participating functions with excellent results, serving to illuminate the subject in the student's mind and to afford, through correlated information, a far better explanation of the disease process than would otherwise be possible. These conferences may be held on cases in the hospital or in the out-patient department, or on cases that have gone to necropsy.

The museum of pathology finds a definite place in pathological teaching, its wealth of illustrative material showing variations in the effects of the same disease entity upon the same organs in different persons. By means of a properly prepared and catalogued museum, each specimen supplied with a clinical history, the teaching of pathology is continued by instructors in the courses in medicine and surgery.

The growth in importance of the subject of *biochemistry* and its manifold applications to clinical medicine has called attention to the significance of this subject as a part of the pre-clinical curriculum. Some few schools have grouped biochemistry with physiology. For the most part, however, the organization of the pre-clinical departments provides that biochemistry shall be handled as a distinct entity, integrating into and correlating with physiology and particularly with clinical medicine. Organic chemistry is now definitely required as a preliminary, and some schools either require a course in physical chemistry or incorporate physical chemistry with biochemistry proper. The reason why biochemistry should properly be stressed as a pre-clinical subject is recognized at once when it becomes apparent that the behavior of the organism may be readily explained through biochemical investigation of body fluids, secretions, excretions, and reactions. The chemistry of colloids has become an integral part of biochemistry, as has the chemistry of the blood, which has shed so much light upon many disease conditions hitherto obscure. It has been determined that many hours of the student's time may be saved by a close correlation between biochemistry and clinical medicine. Practical applications of biochemical methods are usually made through material furnished by university and allied clinics and hospitals.

While the applications of biochemistry to clinical medicine have been increasing, in most schools the course as such has been actually reduced in the number of scheduled hours as a result of the omission of a considerable number of useless, perfunctory, and time-consuming tests.

### III. *Clinical Courses*

The subjects of the third and fourth years in the medical school comprise the so-called clinical curriculum and are definitely based upon the fundamental courses of biochemistry, anatomy, physiology, pathology, etc. of the pre-clinical years. Disease is studied in the light of a clear understanding of the fundamental preceding sciences. Teaching is conducted by means of didactic lectures, quizzes, demonstrations, correlation courses, and the study of cases. The emphasis is placed strongly upon individual observation and study of the manifestations of disease as presented by patients both in the out-patient department and in the hospital.

#### CLINICAL CURRICULUM

1. Medicine
2. Surgery
3. Obstetrics and gynecology

During the past twenty years, experimentation in medical education has been the rule, and it is probably greater than ever today. If one may conclude anything from the pendulum swing of the past few years, it would be that there is no one best way of conducting medical education, since so many of the factors involved vary with the environment of the medical school, its relation, loose or otherwise, with the parent university, the personnel of the faculty, the equipment, the general character and personnel of the students, the several types of college preparation which they represent, and the clinical teaching opportunities.

On one point, however, there is fairly common agreement, namely, that the medical curriculum proper (pre-clinical and clinical) should not exceed 4000 scheduled hours for the four years, divided into approximately 1000 scheduled hours per year. Analysis of the curricula of schools of a few years ago showed scheduled hours varying from 3800 to more than 6000, all to be completed within four academic years of nine months each. The study undertaken by the Association of American Medical Colleges resulted in the following report of the curriculum committee,<sup>13</sup> which was formally adopted by the Association in 1923:

<sup>13</sup> Report of the Committee on Curriculum. *Association of American Medical Colleges. Proceedings*, 1923: 157-161.

REQUIRED SCHEDULE OF HOURS IN FOUR CALENDAR YEARS (FROM 3600 TO 4400 HOURS) DISTRIBUTED SO AS TO GIVE FROM 900 TO 1100 HOURS PER YEAR

|                 |   | PER CENT |
|-----------------|---|----------|
| Pre-clinical    | 1. Anatomy, including embryology and histology . . . . .        | .14 -18½ |
|                 | 2. Physiology . . . . .   | 4½ - 6   |
|                 | 3. Biochemistry . . . . .                                       | 3½ - 4½  |
|                 | 4. Pathology, bacteriology, and immunology . . . . .            | .10 -13  |
|                 | 5. Pharmacology . . . . .                                       | 4 - 5    |
|                 | 6. Hygiene and sanitation . . . . .                             | 3 - 4    |
|                 | 7. General medicine . . . . .                                   | .20 -26½ |
| Clinical        | Neurology and psychiatry  |          |
|                 | Pediatrics  |          |
|                 | Dermatology and syphilis  |          |
|                 | 8. General surgery . . . . .                                    | .13 -17½ |
|                 | Orthopedic surgery  |          |
|                 | Urology   |          |
|                 | Ophthalmology   |          |
|                 | Otolaryngology  |          |
|                 | Röntgenology  |          |
|                 | 9. Obstetrics and gynecology (pre-clinical or clinical or both) | 4 - 5    |
|                 | 10. Electives . . . . .   | 24 - 0   |
| Total . . . . . |   | 100 100  |

### *The Out-Patient Department*

Teachers of medicine have been somewhat inclined, in their demands for hospital clinical material, to relegate to a place of minor importance the wealth of material offered by a well-organized out-patient department. There has been a definite tendency to forget that the student must be taught the practice as well as the principles of medicine, and that the out-patient department offers the best possible cross section of what that practice comprises.

The out-patient department, well manned with teaching personnel, adequately equipped and supervised, constitutes by far the most important factor in the teaching of clinical medicine to undergraduate students. To put it another way, a department capable of carrying 75 per cent of the undergraduate clinical teaching requires only an out-patient service with good quarters, proper equipment, and trained teachers; 75 per cent of all undergraduate teaching in medicine can and possibly should be done in the out-patient department.

Evaluation of the out-patient department should take into account the following points:

1. It requires far greater skill, training, and real thinking power to make a diagnosis and outline the management of a case in the out-patient department than in the hospital, where the house officer, the interne, and the nurse have all recorded significant data as to the history and the physical and clinical

pathologic manifestations before the arrival of the clinician. Therefore, to place out-patient cases in charge of young, untrained clinical assistants and instructors defeats the plan and constitutes a ruthless waste of most valuable teaching material.

2. There should be instructors of professorial rank in charge of each clinic each day, serving not only more acceptably to patients and students but as teachers of junior clinicians.

3. There should be sufficient instructors in each clinic so that patients will not be given perfunctory consideration but will be handled as thoroughly and as expeditiously as private patients in a well-managed office.

4. Arrangement of personnel should be such that there will be a chief of clinic each day in each department, to whom all questions of diagnosis may be referred, and who will take the two or three most valuable teaching cases and discuss them with the assigned student group before the close of the period.

5. A full-time fellow is needed in actual daily charge in each clinic. This fellow, a graduate student, manages the clinic and is in entire charge of the nursing and social-service personnel.

6. Stenographers, nurses, and social-service clerks are a necessary part of the personnel.

Because of the paucity of equipment or the utter lack of it, good teachers are often forced to abandon out-patient teaching. They refuse to be humiliated before students and patients by the lack of the essentials with which to complete a careful, thorough examination. The proper equipment for good out-patient teaching (exactly that of the hospital except for the feature of continuous care in bed) should include the following:

1. An adequate number of examining rooms, with adjacent dressing rooms, each equipped with the necessary examining furniture and instruments.

2. A small laboratory in each service.

3. A large laboratory of clinical pathology with adequate personnel, this laboratory to care for all types of pathologic work, including serology and the preparation of vaccines.

4. A metabolism laboratory.

5. An electrocardiography laboratory.

6. Radiologic and physical-therapy departments with ample provision for fluoroscopy, cystography, and pyelography.

7. A classroom available for each service.

8. Waiting space in each clinic, in preference to one large common waiting room.

9. An accessible library.

10. A photographic and art department.

This equipment is essential even when the teaching hospital occupies the same or an adjoining building, unless the hospital laboratories and services are ample and are under full control of the out-patient services.

The reasons for this emphasis on out-patient teaching may be briefly stated :

First, the student is working with patients who are seeking medical service.

1. He sees the beginnings of disease, not the end-results, and he learns to recognize subjective symptoms.

2. He learns the management of patients and of the friends and relatives ; the control of the unruly child or the frightened mother. He is face to face with the human side of medicine—with the responsibility.

3. He develops resourcefulness.

4. It is probably safe to assume that during the first few years of the professional career of the young practitioner he will be able to hospitalize only a small percentage of his patients. The objective of his training, therefore, must be to give him a thorough plan of the management of his patients from his office. Instead of feeling helpless because of lack of hospital facilities he must acquire a definite and clear-cut idea of the wide possibilities of office and ambulatory management.

5. He learns to work rapidly, yet with accuracy, in taking histories and in making physical examinations.

6. He early learns the importance of forming a definite outline of management, the importance of therapeutics, and the necessity of restoring the patient (the support of a family) to earning capacity at the earliest possible moment.

7. Since the patient is his patient, the student stands or falls on his ability to diagnose the condition correctly and to afford relief.

Second, the instructor is trained.

1. The skillful surgeon is often a poor teacher, largely because of his lack of training in teaching methods under a real clinical teacher. Teaching opportunities are valuable only as they afford instruction. Good teachers in the out-patient department will train good teachers. The head of the department, if he fully appreciates his opportunity and really desires to develop younger teachers, should act as chief of his service in the out-patient department at least once each week for a given period. On his presence will depend the inspiration and stimulus of a large number of younger clinicians.

2. His contacts with his associates are educational, and his ambition is stimulated under conditions that encourage study.

3. His clinical horizon is definitely widened, and his contacts with the pre-clinical branches emphasized and sustained.

4. Opportunities for research are legion.

In his report to the board of managers of the Boston Dispensary of 1837, Dr. Oliver Wendell Holmes, one of the dispensary physicians, wrote as follows :

A consulting room well attended is one of the most valuable schools for students as well as for the practitioners of medicine, since many cases of disease may be seen within a very limited time ; and, being thus collected, may be compared with and illustrate each other.



Dr. Richard M. Pearce says : <sup>14</sup>

That knowledge of medicine which is of lasting value the student can get only from direct study of the patient. The hospital and the dispensary are the laboratories of clinical medicine.

### *The Clinical Clerk*

The teaching of clinical medicine and surgery is personal and individual in the largest degree. The student is presented with a problem, the patient (in the out-patient department or in the hospital ward), and is instructed to apply scientific methods of analysis with the object of restoring the patient to health. The clinical-clerk plan, as used in many schools, may vary considerably in details of operation. In general the student is assigned three or four cases in the hospital wards, and he is given ample time in which to study them. He completes first the patient's history and next the physical examination; he then makes such clinical pathological examinations as may be necessary and arrives at a tentative diagnosis. This diagnosis he must defend in the presence of the instructor and his fellow clerks at the ward rounds which are held daily. At the bedside conference on his case the student receives hints, suggestions, and criticisms, some of which may stimulate him to further investigation before he is prepared to make a final diagnosis. This final diagnosis is arrived at by the student independently, but must be approved by the instructor before it is recorded. The student visits his patient at least once each day, makes careful and detailed progress notes, and usually comes to be regarded by the patient as his or her physician. Should the patient go to operation, the student is present, possibly assists at the operation, and thoroughly describes the pathology found. The surgical after-care of the patient is his particular concern, and here again every step is recorded in the student's progress notes. The student makes a complete outline of the management of the case, making therapeutic, dietary, and nursing suggestions. These are not recorded on the patient's hospital record, but form a part of the student's case report. The student has free access to the patient's hospital record after the diagnosis has been made, not before, and he is encouraged to make suggestions designed to aid the progress of the patient. If the case goes to necropsy, the student must be present, and a summary of the protocol forms a part of his report. Within a few days after the discharge of his case his report is completed and handed to the ward instructor.

<sup>14</sup> Richard M. Pearce. *The Experimental Method : Its Influence on the Teaching of Medicine. Journal of the American Medical Association*, 57: 1017-1023, September 23, 1911.

General instructions covering the work of the clinical clerks may be as follows :

1. The clinical-clerk service is the most important assignment of the third and fourth years.

2. Hospital or dispensary cases for study will be assigned to clinical clerks by designated clinical teachers.

A minimum of ten case reports will be required of each student each quarter. These reports must first be submitted to the staff physician for approval, and must be taken to the registrar's office *not later than two weeks after the close of the quarter*. Each report should be titled with the following :

Student's name  
Patient's name  
Hospital or dispensary service  
Diagnosis  
Staff physician or surgeon  
Date

3. A preliminary history, physical examination, and clinical pathological report should be completed within twenty-four hours after the assignment of the case.

4. Hospital patients must be visited daily ; those in the dispensaries, as often as the convenience of the patient will permit. Dispensary patients may be visited in their homes. Daily progress notes will be made, and incorporated in the report. At the daily ward walks held in the hospital each clerk must be prepared to answer or ask questions about the progress of his cases.

5. The clinical clerk will keep himself constantly informed as to the condition of each case. Clerks are subject to call for presentation of necropsy reports at clinico-pathological conferences. Clerks will also be on call in reporting cases at clinical conferences. Should an assigned case go to necropsy, the clerk must be present, and a résumé of the necropsy protocol will constitute a part of the clerk's report.

6. Clinical clerks are subject to call on emergency cases. They will be accessible at all times on the telephone in the same manner as practicing physicians.

7. The final report will be presented under the following headings :

a. Résumé of significant findings in history ; physical examination and clinical pathology. Tentative diagnosis.

b. Etiology, including brief history of disease entity. For example: pernicious anemia (Addison). Who was Addison? State in a short paragraph his important contributions to clinical medicine.

c. Differential diagnosis.

d. Discussion of progress and treatment, including indications for operation (if any), type of operation, and post-operative care.

e. Brief discussion of the relation to the case of anatomy, physiology, biochemistry, pathology, and bacteriology.

f. Final diagnosis, prognosis, or cause of death.

g. Bibliography. Make six abstracts of current articles dealing with your case. Abstracts must not include long quotations from a given article. Use the abstracts as published in the *Journal of the American Medical Association* as models.

8. Typical textbook reports will not be accepted. The case assigned must be studied and reported. Each clerk will devote the major portion of his time to the study of the individual patient. Cultivate powers of observation and logical thinking. Discuss each case in your own way. Order of presentation, evidence of logical thinking, and clearness of expression are of more value than volumes copied from the work of others. The literature need not be covered exhaustively, but recent literature covering the type case in question should be noted in the bibliography.

9. Clerks will attend all operations scheduled on their cases, regardless of hour or other assignment.

10. Clerks will obey all hospital rules and regulations and respect all instructions given by hospital authorities and members of the hospital staff.

11. With many assigned cases clinical problems requiring special study and investigation will present themselves. Clinical clerks are encouraged to make a special study of such problems.

12. Patients should be approached with the attitude of a conscientious and sympathetic physician, and be made to feel that a service is being rendered them. Test your ability to gain the coöperation of your patients—a large factor in the successful practice of medicine.

The advantages of the clerk system are many. Individual thinking and personal responsibility are developed, thoroughness is encouraged, and a search of the literature is essential. The report itself, written in good English, constitutes valuable training. Hospital clerks are usually required to report an average of one case each week for a period of not less than two quarters, although the total number of patients assigned for preliminary report before the clerk group may be much larger. Reports of clerks on out-patients differ only in that they are shorter, as daily progress notes cannot be made.

### *Apprenticeships*

The internship replaces, in a measure, the apprentice period served by the medical student of a few generations ago. Modern medical education recognizes the advantages of the preceptor—the teacher-physician, whose constant supervision gave the student a clear conception of actual practice, and whose wise judgments helped him to develop a clear perspective.

Dr. Frederick I. Knight, in describing his apprenticeship to Dr. Henry I. Bowditch, says:<sup>15</sup>

He put a record book in my hand and set me at work getting histories of cases. We took the histories of all the men and many of the women, and when it came to the physical examination in the inner office, from how few were we excluded! He would call us in and ask us to examine, as if for con-

<sup>15</sup> Henry I. Bowditch, Frederick I. Knight, and others. *The Memorial Meeting. Boston Medical and Surgical Journal*, 127 : 177-187, August 25, 1892.

sultation. Not the least of the advantages gained by a student from being present in the office of a successful practitioner was the knowledge of how to deal with and talk to patients.

The good results of the old-fashioned preceptorial system as a principle in education have long been acknowledged. Within recent years some schools of engineering have adopted a modified form of the preceptorship, or apprenticeship, plan. The revival of this plan, modified to suit modern conditions, has been undertaken by the medical schools of the University of Wisconsin and the University of California. The plan involves sending senior students to competent physicians and surgeons throughout the state, these apprentices serving for at least one month. The reports of students who have fulfilled the requirements of this service seem to indicate that they not only received valuable instruction in medicine and surgery but that they acquired a new concept of the actual practice of medicine. Many returned to the school eager to review this or that subject of the curriculum. The plan also proved a stimulus to the extramural teachers. One of these teachers writes:

The general effect of the advent of the students on our preceptorial staff was to stimulate closer study and observation of our cases and more careful scrutiny of the therapeutic measures and of the problems of comfort for the patients. Our diagnoses became more exact, and our talk became more guarded, giving an opinion only after we had thought two or three times rather than once. We all became better physicians.<sup>16</sup>

The University of California during the session of 1923-1924 invited to its classrooms alumni of the medical school, general practitioners for the most part, to deliver talks to the medical students on subjects dealing with the actual practice of medicine. These talks were practical and productive of much good. Beginning in 1925<sup>17</sup> a few students were assigned for one month each to practitioners throughout the state. In the opinion of the California faculty the reports of this group warranted a continuation of the preceptorial plan. One of the California students, in his report, writes:

These small-town doctors possess that wonderful something that one acquires in mastering the art of medicine. They do not have patients who are seen in the ward or office and then forgotten. All of their patients are their friends. The doctor is vitally interested in them and they have absolute confidence in him. It is an inspiration to see the faith that these people have. They are a simple people, and demand simplicity in return.<sup>18</sup>

<sup>16</sup> Charles R. Bardeen. Modern Preceptorships. *Annual Congress on Medical Education. Proceedings*, 1928 : 37-42.

<sup>17</sup> Under the supervision of Dr. William J. Kerr.

<sup>18</sup> William J. Kerr. A Unique and Promising Experiment in Medical Education. *California and Western Medicine*, 24: 465, April, 1926.

*Clinical Teachers*

The factor that looms largest in outlining the essentials of good clinical teaching is the teacher. Effective clinical teaching must necessarily be measured by the knowledge, the enthusiasm, the broad human sympathies, and the natural ability of clinical instructors. Of a given medical faculty, possibly 5 per cent will have natural teaching ability. A larger percentage may, however, become excellent teachers through the application of a few elementary principles of pedagogy.

In teaching ability European teachers of medicine are, as a rule, far in advance of American teachers. Attention paid to the manner of presenting a case, the order and sequence, the correlative possibilities, the historical setting of the subject under discussion, and the citing of similar types from hospital or out-patient charts; pathology from the museum; illustrative lantern slides and references from the library—all handled without repetition, without back-tracking—make for real instruction. Under suggestive encouragement, instructors who are invaluable because of special knowledge, but who have been negative forces in the classroom, may become teachers of positive strength.

The plan of securing specialists as clinical teachers is unquestionably the best in the long run. Specialists who have had a broad training are able to see the case as a whole and are better qualified to give the student the correct point of view. There is a tendency among specialists to handle clinical instruction without relating their discussion to other clinical conditions. We cannot dispense with the specialist as a clinical teacher, but we can seek the teacher who has had the broadest general training—one who will admit that the patient may require study from angles other than his own.

Although the condition is happily disappearing, it is still true that many of our clinical teachers are not sufficiently well trained in the pre-clinical sciences. The result is that the student retains only those facts which are concrete and which to him illuminate the subject in a broad way; he forgets or ignores many of the basic principles of the fundamental sciences. There is no more certain way of ruining the student's attitude toward science than by placing over him a teacher of internal medicine who cannot think in terms of physiology. In departments where clinical teachers of the older type abound instructors must be brought to the clinic from the pre-clinical departments. If these particular instructors are medically trained, they will add greatly to the force and effectiveness of the teaching clinic. Students and instructors alike too often fail to realize that clinical medicine is, after all, but the application of chemistry, physics, and biology to disease.

The late Sir William Osler was probably at his best as a clinical teacher. Those of his students who remember his teaching in his early years at Johns Hopkins recall with vividness his development of the diagnosis, his kindly leading of the patient, his appeal to the students for suggestions, and how, finally, all together (the students, the patient, and the professor) arrived at the diagnosis and outlined the management.

A. C. Abbott, writing in the Osler Memorial volume, says of Sir William Osler :

His technique of teaching was altogether unlike anything with which most of us had been familiar . . . always designed to force the student to see, learn, and think for himself.

Charles E. Emerson says of Osler :

He was born a teacher, but his ability in that line was quite as much the result of the hard discipline to which he had subjected himself.

Dr. J. C. Meakins, Professor of Medicine at McGill, in discussing the teaching of medicine, says : <sup>19</sup>

The ideal teacher in medicine should be one with a sound critical experience in clinical medicine.

John Henry Newman says : <sup>20</sup>

An academical system without the personal influence of teachers on pupils is an arctic winter ; it will create an ice-bound, petrified, cast-iron university, and nothing else.

The ideal clinical teacher is one who has a definite conception of his obligation to the student and who is willing to study methods of presenting his subject. He should have had an excellent laboratory training, rendering him better qualified to evaluate properly the laboratory in relation to clinical problems. He must have acquired, through long training in the handling of clinical patients, a definite and logical course of procedure, and he should be in daily contact with the actual practice of medicine. He should have the point of view of the celebrated internist who says : <sup>21</sup>

As a professor of clinical medicine I hold the opinion that an observation made at the bedside is as well to be considered scientific as an observation made on an animal, nor do I think that, because it is unable to speak, the rabbit is a more scientific animal than man.

<sup>19</sup> J. C. Meakins. The Teaching of Medicine. *Bulletin of the Association of American Medical Colleges*, 3 : 108-114, April, 1928.

<sup>20</sup> Quoted by Harvey Cushing in "The Clinical Teacher" and "The Medical Curriculum." *Annual Congress on Medical Education. Proceedings*, 1924.

<sup>21</sup> Friedrich Mueller. The Nervous Affections of the Heart. *Archives of Internal Medicine*, 1 : 1-223, January, 1908.

The late Sir James Mackenzie warned against overdependence upon the laboratory to the exclusion of large clinical experience. He said :<sup>22</sup>

The trend of thought at present, as shown by the methods employed in the so-called advanced medical schools, and as shown by the evidence of the witnesses before the London Commission, is distinctly toward a system which will but aggravate the present problem. The cry of each witness is for more laboratories and better opportunities, not recognizing how they have failed to utilize the opportunities they already possess. As an investigator in clinical medicine my work has been hampered all along the line by an absence of knowledge regarding simple physiological problems.

### *The Experiment in Whole-Time Clinical Teaching*

Those immediately concerned with medical education have the greatest sympathy with the experiment now being tried in several American and a few English medical schools, namely, the development of whole-time clinical teaching. It is to be expected that the profession will watch the experiment with great interest,— some with full approbation, some with certain reservations, and still others with distinct disapproval. The whole-time plan, in part at least, has been in existence for a decade or more, and, while conclusions cannot be drawn, yet certain observations appear warranted.

It would seem axiomatic that a teacher can instruct only in that which he knows. A teacher of fairly narrow vision will rarely be able to stimulate creative thought, and in the teaching of medicine or surgery it is untenable that the true teacher is only he whose practice is limited to his research laboratories and the comparatively few beds allotted him in a university hospital. The widest experience with sick people is narrow enough without the instructor's being compelled to take the figurative vows of renunciation of practice. There will no doubt be found some few persons who shrink from public contacts, and these will naturally be willing, even anxious, to become whole-time, or cloistered, teachers of medicine ; but what stimulus will come from their teaching remains to be seen. One wonders what would have been the effect upon the teaching careers of such men as Christian Fenger, John B. Murphy, Frank Billings, Nicholas Senn, Isaac Abt, and Joseph B. DeLee had they yielded, during their constructive periods, to the lure of the medical cloister. And what would have been the effect upon their students and hence upon the profession of medicine? Theodore C. Janeway pointed out that great clinical teachers must perforce be clinical masters with antecedent long and painstaking

<sup>22</sup> Sir James Mackenzie. *The Aim of Medical Education*. *Edinburgh Medical Journal*, n.s., 20 : 31-48, January, 1918.

clinical training, and that "only constant application of their knowledge can keep them such."

For the part-time teacher one cannot but hold a strong brief. His outside contacts with the actual practice of medicine help to keep his feet on the ground, and he treads a safe pathway. His teaching will reflect both his research spirit and the lessons of practice. He will prove a stimulus to his students, to his colleagues, and to the profession at large, each phase of his duality aiding the other; his patients will benefit by his research, and his research, in turn, will be more wisely directed. Great teachers of medicine have been those who taught from the fullness of a wide, varied, and general clinical contact.

### CHANGING METHODS

The past generation has witnessed the disappearance of the operative amphitheater clinic, with its dramatic appeal — its scenery, actors, and spotlights. In its place has come intensive case study in the out-patient department and in the hospital ward. The sharp dividing line between the pre-clinical and the clinical years is fast disappearing with the introduction of correlation courses. Clinical-clerk service in the third or fourth year, or both, has done much to stimulate logical thinking, and to make thorough diagnostic methods become fixed habits.

Obviously, teaching methods have undergone as radical a change as has medical education in general. Today the experimental method predominates in all subjects and departments of the medical curriculum. In clinical medicine the student is brought directly into contact with the patient, and he is thus enabled to study disease not from a distance or through the words of a lecturer, but at first hand and at the bedside. The teaching of actual practice in the out-patient department or dispensary has received especially important emphasis within the last decade.

### THE FIFTH OR INTERNE YEAR

The four-year course proper does not and cannot fit the student for the actual practice of medicine. For many years most graduates in medicine have sought appointments as internes in hospitals with active medical and surgical services, for the purpose of observing at first hand and participating in the actual care and management of patients. The interne period, usually from one to three years, becomes the application, or practice period, of the medical course. Until the early eighties fewer than 5 per cent of the graduates of the better schools



entered hospitals as internes. The interne period is now regarded as indispensable, and even without the specific requirement but few graduates in medicine have the temerity to enter practice without adequate interne training. Eleven<sup>23</sup> medical schools of the United States now require a minimum of twelve months' hospital service before the student may become a candidate for the degree of doctor of medicine. The interne, or hospital, year is a prerequisite for medical licensure in twelve states and one territory, the enforcement of the requirement resting with the legally constituted licensing boards.<sup>24</sup> Students required to serve the interne year as a part of the medical curriculum are regularly registered for a fifth medical year and are responsible to their respective medical faculties throughout that period. Varying requirements are made of these students by the schools; in most instances a rotating service in a general hospital is stipulated. Faculty supervision is not direct, however, except in those hospitals immediately under the jurisdiction of the school.

While the requirement of the fifth, or hospital, year insures a better product on the part of the medical school, there is a question as to the wisdom of the school's maintaining supervision over this period of the student's training. There is a growing belief that the fifth year should be wholly a requirement of the state licensing boards; the hospitals accredited for the training of internes would thus be brought directly under their control and authority. It is practically impossible for a faculty located in Pittsburgh, for example, to control adequately the work of a student interne in a Los Angeles hospital. The educational emphasis given the interne service has resulted in improvements in hospitals — in their staff personnel, equipment, and management. Many hospitals not affiliated with medical schools have perforce become teaching hospitals in order to secure an adequate supply of competent internes, and the general result has been a higher standard of practice on the part of the respective hospital staffs.

The National Board of Medical Examiners will not permit an applicant to take Part III of their examination until the candidate has completed a hospital internship of acceptable standard. While the requirement stipulates a minimum of twelve months' interne service,

<sup>23</sup> University of Minnesota Medical School, Stanford University School of Medicine, Rush Medical College (The University of Chicago), University of California Medical School, Marquette University School of Medicine, Northwestern University Medical School, University of Illinois College of Medicine, Loyola University School of Medicine, Detroit College of Medicine and Surgery, University of Cincinnati College of Medicine, College of Medical Evangelists.

<sup>24</sup> Pennsylvania, New Jersey, Alaska, Rhode Island, North Dakota, Washington, Illinois, Michigan, Delaware, South Dakota, Utah, Iowa, Wisconsin.

few students take less than eighteen months. There is no assumption on the part of the faculty that the student in one year of hospital interne service will become a thoroughly trained surgeon, internist, or specialist.

*The Teaching Hospital Standard for Internship*

The requirements of the Council on Medical Education and Hospitals of the American Medical Association for hospitals approved for interne training include the following:

1. There shall be an organized staff willing to assume the obligation of teaching internes by personal instruction and by monthly clinical conferences.
2. The hospital must have a pathological department, suitable laboratories, röntgen-ray equipment and röntgenologist library, and proper quarters for internes.
3. Complete records of cases must be systematically taken and properly filed under the care of the librarian.
4. The work of the internes must be regulated so that they will methodically take up history writing, clinical and laboratory work, necropsies, röntgen ray, anesthesia, obstetrics, surgical dressings, operations, responsibility for the diagnosis and care of patients, etc. Although not specifically required, it is suggested that, where a nonrotating service is chosen, additional service be taken that will supply the deficiency in training.

A list of approved hospitals is published each year and is available to all graduates in medicine.

In favor of the one-year rotating service it may be said that this service will assist the student to find himself, affording him a three-months service on each of four divisions, namely, clinical pathology, medicine, surgery, and obstetrics; and he usually has the opportunity of serving an additional six months in the service for which he finds himself best fitted or in which the hospital affords the best training.

The history of the development of hospitals in this country and in Europe proves conclusively that the hospital in which clinical teaching is done usually attains the higher standard of service, and there has developed within the last two decades a recognition on the part of hospital boards and executives that teaching is an asset to a hospital. Since the development of this attitude few medical schools lack adequate hospital teaching facilities. The atmosphere of teaching which pervades the affiliated hospital of today is educational alike to staff, internes, nurses, and the entire hospital personnel. Teaching hospitals may be either university hospitals entirely under the control of the medical school; or affiliated hospitals which are not under the control of any school, but in which teaching is welcomed as a proper function of the hospital.

There are many advantages and some disadvantages in the absolute control of the hospital by the medical school. University hospitals are of the utmost value if they are adequately endowed. Hospitalization is expensive, and unless adequate endowment for the university hospital is provided, the maintenance of the hospital may become a drag upon the medical budget to such an extent that departments of medical instruction and investigation will suffer. The controlled case, managed on a university basis, adds materially to the research productivity of the clinical staff, and in the university hospital the several laboratories are much more accurately and closely correlated with the clinical wards. Furthermore, patients valuable for teaching purposes may be retained as long as their teaching value exists.

The affiliated, or extramural, hospitals can, however, serve adequately for a large part of hospital clinical teaching. Exceptions, of course, must necessarily be made for schools located at Ann Arbor (Michigan), Iowa City (Iowa), Charlottesville (Virginia), and Madison (Wisconsin), where university hospitals are absolutely necessary. An ideal situation obtains at Albany, where the city hospital is *de facto* a part of the medical school. The Albany Medical College has the scientific and clinical direction of the major and minor services of the Albany Hospital (totaling 600 beds) because the heads of the clinical and laboratory departments of the medical school are the heads of corresponding departments in the hospital and its dispensaries. Services in Bellevue Hospital, New York, are divided so that the faculties of three medical schools practically control the teaching. The reorganized medical school of the University of Southern California will no doubt have at its command the unusual clinical opportunities afforded by the City and County Hospital of Los Angeles.

There are corresponding arrangements in other cities, such as Chicago, Milwaukee, Cleveland, and Cincinnati. In the last-named city the Cincinnati General Hospital and the Medical School of the University of Cincinnati constitute an integral unit, and the dean of the medical school is the professor of hospital administration and *ex officio* director of the hospital. In Louisville the medical school, a part of a municipal university, practically controls the city hospital. In New Orleans the great Charity Hospital, consisting of 1551 beds, has by an act of the Louisiana legislature been made the teaching hospital of Tulane University College of Medicine, with practical instruction to students given in the wards in medicine, surgery, midwifery, gynecology, and pathology, and with the out-patient department (with nearly 230,000 patients' visits in 1927) under the control and jurisdiction of the medical school. In St. Louis affiliation agreements

exist between Washington University School of Medicine and Barnes Hospital, the St. Louis Children's Hospital, and the St. Louis Maternity Hospital. Under these agreements the university provides the staffs of the hospitals, and the hospitals agree in turn to permit the university to use the patients and facilities of the hospital for teaching and research. The buildings of the School of Medicine are connected by corridor and tunnel with these three hospitals.

In large cities with numerous hospitals furnishing abundant clinical material it would seem unnecessary to invest large funds in the construction and maintenance of hospitals strictly university in character, and all hospitals, public or semi-public in nature, located in centers where medical education is being conducted, should seek, for their own advantage, close affiliation with the teaching of medicine. The university could thus assure public hospitals the best possible medical skill and attention in the care of the sick. This arrangement also avoids the deplorable disadvantages which obtain when political appointees are given medical and surgical supervision over the sick poor, and constitutes a definite safeguard against careless and inefficient practice.

#### *Extramural Hospitals*

The extramural hospital is, or should be, no matter where it is situated, a teaching institution, inasmuch as internes and pupil nurses are taught. In many instances the non-university hospital affords the best possible opportunity for the exercise of clinical-clerk work, working to the advantage of the patient and affording a stimulus to the hospital staff. Men not on the faculty of the medical school and at the same time members of the staff could be made extramural teachers or be made to feel welcome in the laboratories of the medical school and to its seminars and symposiums, and thus constitute a factor in the postgraduate training of the hospital staff.

As Mr. Pritchett so well says :<sup>25</sup>

The hospital is an essential part of the medical school, both graduate and undergraduate. No patients are so well served as those of the hospital where the members of the staff are dealing day by day with alert, eager medical students. From whatever point of view one considers the medical school and the hospital, it is clear that their purposes are so related that medical instruction cannot be given successfully except in relation to a hospital, and a hospital cannot reach its highest usefulness without taking some responsibility for the education of the public, of the medical student, and of the medical practitioner.

<sup>25</sup> The Relation of Medical Education to Medical Progress. *Carnegie Foundation for the Advancement of Teaching. Annual Report, 1921 : 59-60.*

## OBJECTIVES OF MEDICAL TRAINING

The primary objectives of medical training may be stated as follows:

1. To train adequately intelligent persons to become competent practitioners of medicine.
2. To widen the boundaries of human knowledge.
3. To disseminate health information to the public; to teach both students and the laity the principles of preventive medicine.

By a competent practitioner of medicine we mean one who is committed to a life of service and who is well trained as far as our knowledge will permit in the alleviation of suffering and the prevention of disease. He must be able to detect disease, determine its origin, recognize its danger, and assist the patient in the recovery of his health. In order to do this the student must recognize the disease entity and be able to trace its course accurately from day to day, almost from hour to hour. Only a few years ago students saw patients in the amphitheater at a given stage of a disease process and never saw them again; yet they were expected to reconstruct the complete story of a disease process from a glimpse at a five-foot section of a thousand-foot film.

There is a definite consciousness, on the part of those dealing with medical education, of the tremendous responsibility which is theirs. Upon the high standard of their product depend the health and well-being of the people. This realization has been in a large measure responsible for the rigorous requirement of the pre-medical and medical-college training. No type of professional training in America today demands so long a period of study, and the several states have by enactment of law made these demands obligatory. Because of the intimate relation of the physician with his patients and the understanding which he must possess of their problems, the physician becomes of necessity a vital social factor. In the prevention of epidemics and in the lessening of the term of disability he becomes an important economic agent.

*Changing Emphasis Necessary*

As standards of medical education increase, the public gains materially, first, in the advancement of the science of medicine—in the discoveries of new facts applicable to the prevention or treatment of disease; second, in the higher quality and standard of medical service which the graduates are capable of rendering.

Every medical student should remember that his end is not to be made a chemist or physiologist or anatomist, but to learn how to recognize and treat disease, how to become a practical physician.<sup>26</sup>

It is possible to understand the changing emphasis that must be placed upon the student's training by a study of the two following tables, I and II.<sup>27</sup> Table I shows that nearly one third of the total deaths in the registration area are due to diseases of the heart and of the respiratory system, excluding tuberculosis.

TABLE I. CAUSES OF 1,193,017 DEATHS IN REGISTRATION AREA OF THE UNITED STATES, 1923<sup>28</sup>

|   | PER CENT     |
|---|--------------|
| Diseases of the heart . . . . .   | 14.3         |
| Pneumonia, influenza, and other diseases of the respiratory system<br>(exclusive of tuberculosis) . . . . . | 14.1         |
| Tuberculosis . . . . .  | 7.6          |
| Cerebral hemorrhage and softening . . . . .   | 7.4          |
| Malignant growths . . . . .   | 7.3          |
| Nephritis . . . . .   | 7.3          |
| Violent deaths (exclusive of suicide) . . . . .   | 6.9          |
| Congenital debility and malformations . . . . .   | 5.9          |
| Diarrhea and enteritis . . . . .  | 3.2          |
| Puerperal septicemia, accidents of pregnancy, diseases of the female<br>genital organs . . . . .            | 1.7          |
| Typhoid, malaria, scarlet fever, meningitis . . . . .   | 1.4          |
| Appendicitis and typhlitis . . . . .  | 1.2          |
| Senility . . . . .  | 1.1          |
| Diphtheria . . . . .  | 1.0          |
| Epidemic and endemic diseases (other than given elsewhere) . . . . .  | 1.0          |
| Diseases of the stomach (exclusive of malignancy) . . . . .   | 1.0          |
| Measles . . . . .   | 1.0 —        |
| Whooping cough . . . . .  | 1.0 —        |
| Hernia, intestinal obstruction . . . . .  | 1.0 —        |
| Suicide . . . . .   | 1.0, —       |
| Unknown or ill-defined diseases . . . . .   | 1.4          |
| Other diseases . . . . .  | 12.2         |
|   | <u>100.0</u> |

A glance at Table II shows the changing type of practice in the registration areas of the United States: typhoid and paratyphoid fever is no longer an important problem facing the practicing physician. Between 1900 and 1923 sharp drops are noted in the incidence of malaria, scarlet fever, diphtheria, tuberculosis, and infectious diarrhea, while diseases of the heart and blood vessels particularly show marked increases. There is a changing emphasis, due to the development of

<sup>26</sup> William Osler. *Æquanimitas*.

<sup>27</sup> Preliminary Report of the Commission on Medical Education, January, 1927, Appendix, Tables X and XI.

<sup>28</sup> United States Mortality Statistics, 1923. Bureau of the Census.

preventive medicine in the practice of the average physician, which of necessity must be reflected in the emphasis given his medical training. In other words, the amount of time given in the clinical curriculum to diseases such as typhoid fever and malaria need not be as great as it was twenty or thirty years ago. It is equally obvious that more attention must be given to diseases of the respiratory system and of the heart and blood vessels and to the early recognition of cancer.

TABLE II. MORTALITY FROM CERTAIN SPECIFIC CAUSES PER 100,000  
ESTIMATED POPULATION IN THE REGISTRATION AREA <sup>29</sup>

| CAUSE OF DEATH                               | PER CENT<br>IN 1900 | PER CENT<br>IN 1923 | PER CENT<br>OF CHANGE |
|--|---------------------|---------------------|-----------------------|
| Typhoid and paratyphoid fever . . . . .      | 35.9                | 6.8                 | - 80                  |
| Malaria . . . . .                            | 7.9                 | 2.8                 | - 65                  |
| Smallpox . . . . .                           | 1.9                 | 0.1                 | - 95                  |
| Scarlet fever . . . . .                      | 10.2                | 3.5                 | - 66                  |
| Diphtheria . . . . .                         | 43.3                | 12.1                | - 72                  |
| Tuberculosis of the respiratory system . . . | 181.8               | 83.5                | - 54                  |
| Other forms of tuberculosis . . . . .        | 20.1                | 10.0                | - 50                  |
| Diarrhea and enteritis . . . . .             | 133.2               | 39.9                | - 70                  |
| Cancer and other malignant tumors . . . .    | 63.0                | 89.4                | + 42                  |
| Diabetes mellitus . . . . .                  | 9.7                 | 17.9                | + 85                  |
| Cerebral hemorrhage and softening . . . .    | 75.5                | 92.2                | + 23                  |
| Diseases of the heart . . . . .              | 132.1               | 175.3               | + 33                  |
| Acute and chronic nephritis . . . . .        | 89.0                | 90.1                | + 1                   |

### *Medical Education and the Profession*

Inasmuch as the medical profession, as represented in its present personnel, is the product of some type of medical education, some legally constituted school for the training of physicians, it follows as a natural corollary that the profession is now and always will remain vitally concerned in medical education.

The graduates of the past twenty years or so constitute the product of a changing educational point of view. The general level of preparation for medical training has been raised, and the actual training in medicine itself has been greatly improved. This is of importance, since to the ranks of medicine there are being added several thousand new graduates yearly. This means that in the course of each decade the personnel and training objectives of the profession as a whole may be subject to radical alteration. We must recognize, therefore, that the ideals, the ethics, and the actual practice of medicine are subject

<sup>29</sup> United States Mortality Statistics, 1923. Bureau of the Census.

to wide and sweeping change each twelve to fifteen years—not at one given moment but by the increasing ratio of recent graduates with newborn ideas. The graduates of each succeeding year *should* be better trained than those preceding them, but it is of the utmost importance that technical training alone shall not be substituted for the ideals, the altruism, and the art of medicine.

The standards of the profession quickly reflect the standards of medical education,—moral as well as intellectual,—and unless the schools recognize the larger duty of training only men and women who are capable of sustaining the honor and integrity of the profession, of carrying forward the banner of service to humanity, the profession as such will be bound to suffer. A businesslike management of one's practice and of one's personal affairs—business methods applied to all phases of medicine—need not in the least kill one's sense of duty to one's fellow man or one's responsibility for his well-being. Medicine is not a trade; should it ever become such, its service character and its appeal to society would be utterly lost. One responsibility, then, lies at the door of the schools; namely, that medicine shall still be taught as a profession of ideals, by men of character and of sympathy—not, however, with the lax business teaching of the profession of a generation or two ago.

The needs of the profession—the types of graduates desired, the emphasis on this or that in the medical curriculum—can be ascertained by the schools only through the closest possible contact with the profession. It is presumed that this contact is made through the Council on Medical Education and Hospitals of the American Medical Association, and yet it is hardly reasonable to expect that a single agency, the Council, can maintain an intimate contact with the profession as a whole. It would seem reasonable to expect that the schools themselves should create and maintain a fairly close contact with the profession in states in which their graduates normally settle. Only one state society of recent years—that of Louisiana—has made any attempt to advise with medical schools looking toward a better professional output.

To give members of the profession real teaching opportunities is one of the privileges of schools of medicine, and to aid in this development is a duty. Not all can or will become teachers, but real teachers are needed as never before, and widening the scope of the teaching activities of the schools will find ready response on the part of alert members of the profession. Teaching opportunities exist in a far larger number than is evident at first thought. The introduction of the clinical-clerk system, with its wider spread into noncontrolled



hospitals, will of its own force seek and find teachers in places hitherto wholly overlooked. The profession in general neglects a most important teaching duty, namely, the teaching of internes. Hospitals require internes and often wonder why more applications are not received from prospective graduates. The reason is clear: the hospital offers no teaching. The interne period, both to the school and to the graduate, is the test of the medical curriculum. In that period the interne learns to apply his knowledge because he is taught to do so, and not by blunderingly or brazenly or foolishly doing things for the first time on his own responsibility. If mere experience is desired, he might better be in some rural community where physicians are badly needed. He must learn by doing, but doing under instruction. For years graduates have characterized hospitals as good or bad according to the teaching willingness, even eagerness, of the staff.

There is no warrant for the assumption that there is a fixed and determined best plan for conducting medical education. On the contrary, the stereotyped character of the curriculum has been almost wholly lost in schools with thinking faculties. It is perfectly sound to expect that School A can train its men better under a given plan which differs markedly from an equally successful plan adopted by School B, the product of each system, considering the quality of the material, measuring about the same. Every medical faculty must study its own problem of medical education, keeping constantly in mind the basic factors of personnel of faculty, personnel and preparation of students, adequacy of laboratories, types of hospitals under control and in affiliation, and, *most important of all*, the profession of which the students must form an integral part.

### *Measurement of Product of Medical Education*

There is a growing tendency on the part of those interested in medical education to measure, as accurately as may be, the product of the present system of medical training. This species of self-analysis on the part of medical faculties will no doubt be productive of much good. The hospital is asked to measure the capacities of the interne in terms of the requirements of the hospital. Ultimately the community in which he locates measures the physician with reasonable accuracy. The increasing tendency of recent graduates to form an association with older practitioners has become another factor in measuring the output. The large amount of so-called contract or part-time medical employment, such as life insurance, industrial medicine and surgery, health examinations, and employers' liability service, has,

in the reports of the physicians employed, constituted itself another factor in this measurement. The usual prompt association of the recent graduate with his county medical society and his participation in the activities of that organization assist his colleagues in measuring him. Finally, the recent graduate measures himself in terms of his ability to meet satisfactorily the various problems that are presented to him.

It is safe to say that all these forms of measurement should react in modifying the direction and emphasis of the student's medical training. It should be recalled that the undergraduate curriculum does not and cannot train the student to become a specialist in ophthalmology, otorhinolaryngology, urology, neurology, internal medicine, surgery, or any other department of the general field of medicine. This is an entirely different problem, as will be noted under the topic "Graduate Medical Education."

Certain shortcomings that appear on the part of the medical graduates, such as insufficient information on medico-legal questions, ignorance of the health laws of the state or city in which the graduate may practice, are in themselves easily remedied; but the basic criticism that the graduate has not as yet learned to think, and think to a logical conclusion, is far more difficult of remedy. If the medical curriculum, teeming with courses requiring exact and logical thinking, has not been able to create this habit in the student, then the faculty should either fail to recommend him for graduation or have discovered this tendency earlier in his course and have urged the student to change the direction of his educational program.

It cannot be gainsaid that the recent graduate has more information and a more rational method of procedure in relation to the sick individual than had the graduate of twenty years ago, and what he lacks in experience is in a measure compensated by the newer knowledge that he brings to his community. With each year of active practice he undergoes a process of maturation which renders him increasingly valuable to his public. The factor of experience, however, is not so important as it was a decade or two ago. In the older type of training the student rarely came into actual contact with the patient. Under the present system the student, during his third and fourth medical years and during his interne year, comes into intimate contact with hundreds of patients representing many phases of illness. He has probably seen and studied many more cases before his graduation in medicine than the general practitioner of a generation ago saw and studied during the first several years of actual practice. The recent

graduate has the advantage that the cases he sees and studies are handled by him as individual problems, and he has also the advantage of the guidance of clinical teachers of definite power.

Medical education must be designed to meet the needs of the people. It cannot be set up as an arbitrary "best way" without considering the problems the student must meet when he engages in practice. In other words, medical education must constantly maintain its touch with the practitioner's problems and train men accordingly. Owing to changing methods of living, changing economic conditions, and new and improved methods of transportation, new and different problems are coming to the practitioner of medicine. Present-day graduates meet far more accident cases than did the practitioners of a generation ago, and a new emphasis must be given to the teaching of accident, industrial, and rehabilitation surgery.

The criticism of present-day medical training may be summed up in a single sentence: The course is too long and too detailed, defeating the very aim of education. As William J. Mayo so well puts it:<sup>30</sup>

We try to teach our medical students something of all the medical sciences. Without intending to criticize unkindly, I believe that we devote too much effort to driving home detailed information and too little to the development of perspective. None of us here would pretend to a complete knowledge of even one subject, and yet we work our medical students seven days in the week to give them a smattering of everything. Many of them, in trying to achieve the impossible, are burned out mentally before they finish school. The detailed information we try so hard to give the medical student all can be obtained from books. We should teach him how to think and where to look for information, so that commencement will be what the term implies, the beginning of the study of medicine, rather than a consummation for medical practice.

In the preliminary report of the Commission on Medical Education, January, 1927, notation is made of the results of a questionnaire sent to a group of practitioners of medicine. Results of the inquiry showed that in the group replying to the questionnaire the subjects in which they considered themselves least well prepared were functional nervous disorders, nutritional disorders, ophthalmology, and orthopedics. The primary criticism seemed to center on the disproportionate amount of time allotted to laboratory work in the pre-clinical sciences, with a definite lack of correlation. The criticism of the clinical teaching centered on the fact that much of the teaching was in the hands of specialists, with the emphasis on rare and unusual clinical conditions. Many felt that there was absolutely no instruction seeking particu-

<sup>30</sup> *Annual Congress on Medical Education. Proceedings, 1927.*

larly to develop the students in dealing with the patient and the family. The preliminary report summarizes these criticisms as follows:

1. There is overcrowding in the schedule of work throughout the medical course.

2. Much of the teaching in the science courses, both in laboratory and theoretical work, does not contribute to a sufficient understanding of those basic sciences upon which intelligent practice or other medical work depends.

3. Too much of the clinical teaching is from the standpoint of the specialist and on rare diseases, and not enough from the standpoint of the needs of most patients.

4. The divided responsibility for the care of patients, and the impersonal attitude so frequently taken toward patients in the hospital and clinic, handicap the preparation of students for the assumption of individual responsibility required in practice and for the large emotional and psychological factors seen in many illnesses.

As has been shown, the curriculum has been definitely shortened in most present-day schools, and the emphasis on the experimental method of teaching and on individual student work and responsibility answers in the main the criticisms voiced. There has no doubt been too wide a swing of the pendulum toward the detailed type of course, but care should be taken that the return swing shall not be too far in the opposite direction. Students will always need direction. The emphasis of today, however, upon clear thinking and the development of judgment should show in the product of the next few years.

### PREVENTIVE MEDICINE

The great loss of man power evidenced by physical examinations made during the World War has aroused the profession of medicine as never before to the importance of preventive medicine. The prevention of disease adequately emphasized to the public will enormously reduce this largely unnecessary loss in physical efficiency. Heart disease leads the causes of death in the registration areas, with 14.3 per cent. It is not too much to say that the incidence of heart disease may be greatly reduced through the proper attention to infections (respiratory, nasal, pharyngeal, and the like).

There is also a growing demand for the proper training of public-health officers, public-health nurses, and trained workers in social medicine. The allurements and demands of medical practice up to the present time have attracted the attention of medical students to the exclusion of specialized training in preventive medicine, and so far the number of students looking toward public health as a career has been small. The United States Public Health Service and the Inter-

national Health Board are each year employing a number of recent graduates in medicine. These graduates are given special training in public-health work, epidemiology, etc., and many are remaining permanently in this field. The medical school that fails to provide the essentials of instruction in preventive medicine, in vital statistics, in sanitary science, in public-health laboratory methods, in epidemiology, in preventive sanitation, in preventive hygiene (such as mental, social, personal, and dental hygiene), and in public-health education and public-health administration is neglecting the greatest public asset which medicine offers.

The following outline has been suggested:<sup>31</sup>

1. A regular course of instruction, preferably during the fourth year, consisting of lectures and field demonstrations, with the laboratory exercises involved in teaching the application of principles of epidemiology in the prevention and control of disease.

2. The coördination of this course with activities of official health agencies carried on in the community and surrounding territory.

3. Special correlation of instruction in the department of preventive medicine and public health with the course in bacteriology.

4. Coördination of the work of the department with a limited number of clinics on infections and dietary and occupational diseases in the department of medicine.

5. Coöperation of the departments of the medical school in teaching the principles of preventive medicine throughout the medical curriculum.

6. Assignment of special problems in public health to students for study in the community. The reports, when deemed desirable, are discussed in class conference.

7. A sanitary survey of a definite area in the community, or of a small town or city.

## RESEARCH

From time immemorial medicine has demanded strong adherence to the principle that it shall always be the duty of students of medical science to advance the boundaries of human knowledge. The atmosphere of investigation in the several departments of the medical school makes for illuminating teaching and productive thinking on the part of both students and faculty. Undergraduate research is encouraged, and in this work considerable productive use is made of the student's free time with the student's objective definitely fixed upon the best possible preparation for the practice of medicine. A research problem teaches him the methods of science, inculcates accuracy, and aids in the great desideratum, the development of logical thinking. Many

<sup>31</sup> W. S. Leathers. The Place of Preventive Medicine in the Medical School. *Annual Congress on Medical Education. Proceedings, 1927*: 20-25.

undergraduate students are encouraged, if finances and time permit, to register in the graduate school and devote a full year to a research problem. It would be utterly useless to assign research problems to undergraduates unless the curriculum is so arranged as to permit of adequate free time. The mere compilation of determinations, instrumental data, and the like should not be interpreted as research. The problems assigned to undergraduates should be largely those demanding and stimulating original work.

It is far more important that the medical faculty shall contain a few individuals capable of inspiring and directing investigation than that those same individuals shall in themselves be large producers. The research worker *per se* is too rarely a person capable of inspiring others with the spirit of investigation. There are a few, and the world of science is richer for their existence; but there are many men who, not themselves large producers of research, are nevertheless filled with original ideas, who are constantly discovering new fields for investigation, and who by their interest and enthusiasm stimulate their students.

It is a perfectly defensible proposition to substitute for almost any group of scheduled hours in the undergraduate curriculum a minor research problem in any department of the medical school, in order to give the student a clearer insight into the method and manner of accurate investigation. The effect upon the student of obtaining, by exact methods, results which are his own is of incalculable benefit. As a result the student attacks the medical curriculum from a clearer point of view and with added interest. Those who have been dealing with medical students for a few years can recall numerous examples of the apparently apathetic student aroused to intense interest and activity through the mastery of a minor research problem. No procedure will emphasize to the student quite so emphatically the necessity of the mastery of the pre-clinical sciences. He becomes keenly conscious of the dependence of clinical medicine upon the basic sciences.

### *Cost of Medical Training*

Since the year 1910 student fees have more than doubled in some schools, and the budgets of schools have risen enormously. It is doubtful whether the results achieved have as yet fully justified the increase in cost. The budgets of several schools, divided by the number of undergraduate students, show a cost per student in excess of \$1500. Investigation and research, which absorb a fairly large proportion of the budget of the modern medical school, should not be

charged directly to undergraduate medical education. Departments carrying on active research could justifiably charge 20 to 40 per cent to research. Adequate support for research in a modern university medical school is a necessity, but should be set up as such and not included in figures showing the cost of undergraduate training.

Even with increased cost of equipment, men, and supplies it would seem hardly justifiable to expect universities to support medical education where the cost of undergraduate training exceeds \$1000 per student per year. The fact that the student pays, in fees, on an average less than one third of this amount, deserves consideration. In a few instances the necessity for maintaining university hospitals<sup>32</sup> has burdened medical instruction with an enormous basic cost. While it is true that the services rendered by the university hospital in a large measure justify the expenditure, yet if the medical school were located in the largest convenient city (for example, the University of Michigan in Detroit instead of in Ann Arbor, the University of Iowa in Des Moines, the University of Virginia in Richmond, and the University of Wisconsin in Milwaukee), with the increased hospital facilities of those cities and with the large number of outstanding able clinical teachers usually afforded by such cities, a university hospital of one fourth the projected capacity, through the utilization of the available clinical facilities of those cities, would furnish not just as good, but superior, clinical instruction. Some few schools have seen this definite clinical advantage as well as economy. Examples are the University of Colorado in Denver, the University of Nebraska in Omaha, the University of Indiana in Indianapolis, the University of Illinois in Chicago, the University of California and Leland Stanford University in San Francisco.

Accurate figures as to medical budgets are difficult to obtain, but confidential information from approximately thirty well-organized schools leads to the conclusion that undergraduate medical training that costs much under \$700 or \$800 per student would indicate inadequate instruction, while training that costs much in excess of \$1200 per student would indicate "luxus consumption." University authorities will need to watch the increasing demands of the medical-school budget, lest the basic instructional features be permitted to become educationally top-heavy.

Flexner points out the sharp rise in cost of medical training in several American institutions.<sup>33</sup> He estimates that a medical school which stood still would in 1922 have spent 75 per cent more than in 1910.

<sup>32</sup> Notably the University of Iowa and the University of Michigan.<sup>1</sup>

<sup>33</sup> Abraham Flexner. *Medical Education*, p. 302. The Macmillan Company, 1925.

Thus, Johns Hopkins spending little above \$100,000 a year in 1910, Harvard spending something over \$250,000, Washington University \$52,000, Iowa \$35,000, Yale less than \$50,000 at the same date, could probably have preserved the scale and efficiency of that day by expending, respectively, \$175,000, \$437,500, \$91,000, \$61,250, and \$87,500 in 1922 (the multiplier used, 175 per cent, represents a fair estimate of the increase in costs between 1910 and 1922).

The budgets of medical schools have risen, however, far beyond this "stand still" position, as Mr. Flexner shows. That of Johns Hopkins has increased 450 per cent; of Harvard, 118 per cent; of Washington University, 586 per cent; of the University of Iowa, 900 per cent; of Yale, 650 per cent.

The following table shows the enormous increase in endowment of a few American schools.

| INSTITUTION  | ENDOWMENT<br>IN 1910 | ENDOWMENT<br>IN 1924 |
|--|----------------------|----------------------|
| Johns Hopkins Medical School . . . . .             | \$437,581            | \$7,504,956          |
| Yale Medical School . . . . .                      | 278,099              | 4,162,871            |
| Washington University Medical School . . . . .     | None                 | 4,883,375            |
| Harvard Medical School . . . . .                   | 3,216,197            | 7,339,671            |
| McGill Medical School . . . . .                    | 268,050              | 2,509,400            |
| University of Toronto Medical Department . . . . . | None                 | 1,083,600            |

### MEDICAL-PRACTICE ACTS

As has been noted, until comparatively recent date the business of medical education and of licensure were combined, the diploma carrying with it the right to engage in the practice of medicine.

The development of the medical-practice acts of the several states, and the resultant exercise of some legal control over the practice of medicine, began with the medical-practice act of North Carolina, which was passed in 1859. For two decades the North Carolina act remained the only sound medical-practice act in the United States. Among the states passing legislation governing the practice of medicine at this early period were Kentucky, which in 1874 passed a medical-practice act creating district boards of medical examiners; Nevada, in 1875; California and Texas, in 1876; Alabama and Illinois, in 1878; Kansas, in 1879; and New York, in 1880. Today every state in the Union is provided with a state board of medical examiners. Many of the boards are backed by strong medical-practice acts; some are provided with discretionary powers as to the recognition of graduates from medical schools of certain types. Too much credit cannot



be accorded to the examining boards of the several states and to the state boards of health (which sometimes include licensure) for their strong support of the movement toward higher standards in medical education. Except for their help the accomplishments of the past quarter of a century, even in partial measure, could not have been brought about.

In establishing requirements for medical licensure the state boards of medical examiners have reflected, with but few exceptions, the increased requirements of the medical schools. Forty-two states, including the territory of Alaska, have adopted requirements for preliminary education in addition to the standard four-year high-school course.<sup>34</sup> Thirty-nine states now require a two-year pre-medical college course. Twelve states have adopted the requirement of a hospital internship of at least one year as a prerequisite to licensure.<sup>35</sup> Practical examinations in addition to those required to be written are now required in six states.<sup>36</sup> The licensing boards of forty-nine states refused to recognize graduates of low-grade colleges (Class C of the A. M. A. classification). For many years graduates of low-grade, non-recognized schools of medicine have been admitted to medical licensure in the states of Arkansas, Connecticut, and Florida. These states had, in addition to the regular medical boards, separate licensing boards of eclectic medical examiners. The Connecticut eclectic board in 1923 certified to the commissioner of health of that state the names of twenty-three candidates as having passed medical-licensure examinations. These twenty-three persons the Connecticut commissioner refused to license; late in the year 1923 came the exposé of the Missouri diploma-mill activities, and shortly thereafter approximately one hundred and sixty-seven licenses to practice medicine were refused or revoked by the Connecticut authorities on the ground of illegality. In Florida three separate licensing boards were abolished in 1921. Arkansas therefore remains the only state in which the board of eclectic examiners is still granting licenses to graduates of low-grade medical schools. The non-recognition of certain colleges of course limits the practice of graduates of those colleges entirely to the states admitting the graduates to examination for medical licensure. For example, the Chicago

<sup>34</sup> The District of Columbia and the states of Delaware, Massachusetts, Missouri, Nebraska, Nevada, Ohio, and Wyoming do not require any preparatory work in college whatever.

<sup>35</sup> Pennsylvania, New Jersey, Alaska, Rhode Island, North Dakota, Washington, Illinois, Delaware, Michigan, Iowa, South Dakota, Utah. The requirements of medical schools and state boards are overwhelmingly, if not unanimously, for the rotation service in general hospitals.

<sup>36</sup> Illinois, Massachusetts, Michigan, North Dakota, Ohio, and South Dakota.

Medical School (Chicago Hospital College of Medicine) is recognized by only three state licensing bodies,<sup>37</sup> the College of Physicians and Surgeons of Boston, by two<sup>38</sup>; the Kansas City College of Medicine and Surgery, by three<sup>39</sup>; Kansas City University of Physicians and Surgeons, by two<sup>40</sup>; Middlesex College of Medicine and Surgery, by two<sup>41</sup>; and St. Louis College of Physicians and Surgeons, by one.<sup>42</sup>

The following table affords a striking illustration of the advance in licensure requirements between 1904 and 1927.

| REQUIREMENT OR PROVISION  | NUMBER OF STATES HAVING PROVISION |      |          | NUMBER OF STATES STILL HAVING NO PROVISION |
|---|-----------------------------------|------|----------|--|
|   | 1904                              | 1926 | Increase |  |
| Preliminary education :   |                                   |      |          |  |
| Any requirement . . . . .   | 20                                | 46   | 26       | 4  |
| A standard four-year high-school education or higher . . . . .                | 10                                | 46   | 36       | 4  |
| One year or more of college work . . . .                                      | 0                                 | 42   | 42       | 8  |
| Two years of college work as a minimum  | 0                                 | 39   | 39       | 11   |
| All applicants must be graduates of a medical college . . . . .               | 36                                | 49   | 13       | 1  |
| All applicants must undergo an examination for license . . . . .              | 45                                | 50   | 5        | 0  |
| Hospital interne year required . . . . .                                      | 0                                 | 12   | 12       | 38   |
| Full authority by board to refuse recognition to low-grade colleges . . . . . | 14                                | 46   | 32       | 4  |
| Boards refusing to recognize low-grade colleges . . . . .                     | 5                                 | 49   | 44       | 1  |
| Reciprocal relations with other states . .                                    | 27                                | 44   | 17       | 6  |
| Single boards of medical examiners . . .                                      | 36                                | 45   | 9        | 5  |

#### NATIONAL BOARD OF MEDICAL EXAMINERS

The National Board of Medical Examiners was organized in 1915. The board consists of twenty-one members, including the three surgeons-general of the army, navy, and public-health service, and one other representative of each of these services, one representative of the state licensing boards, and fourteen members appointed at large.

<sup>37</sup> District of Columbia, Illinois, and Massachusetts.

<sup>38</sup> District of Columbia, Massachusetts.

<sup>39</sup> Alaska, Arizona, District of Columbia.

<sup>40</sup> District of Columbia, Massachusetts.

<sup>41</sup> District of Columbia, Massachusetts.

<sup>42</sup> Massachusetts.

Examinations were first held in 1916, and approximately semi-annually thereafter until 1922, when the type of examination was changed. The examination is now divided into three parts: Part I, a written examination in the six fundamental medical sciences—*anatomy, including histology and embryology; physiology; physiological chemistry; general pathology; bacteriology; materia medica and pharmacology.* Part II, a written examination in *medicine, including pediatrics, neuropsychiatry, and therapeutics; surgery, including applied anatomy, surgical pathology, and surgical specialties; obstetrics and gynecology; public health, including hygiene and medical jurisprudence.* Part III, a practical examination in each of the four following subjects: (1) *clinical medicine, including medical pathology, applied physiology, clinical chemistry, clinical microscopy, and dermatology;* (2) *clinical surgery, including applied anatomy, surgical pathology, operative surgery, and the surgical specialties of the diseases of the eye, ear, nose, and throat;* (3) *obstetrics and gynecology;* (4) *public health, including sanitary bacteriology and the communicable diseases.* Parts I and II are held in any Class A medical school, and Part III is given by subsidiary boards in sixteen cities.<sup>43</sup>

During the first four years the board examined 4606 graduates. Holders of certificates from the National Board of Medical Examiners are registered without further question in thirty-eight states and territories.<sup>44</sup>

### GRADUATE MEDICAL EDUCATION

In 1920 an inquiry concerning the possibilities for graduate work in medicine was conducted by the Council on Medical Education of the A. M. A. Fifteen special committees, in as many different fields of medical work, were appointed, each committee reporting at the Congress on Medical Education in March, 1921. As a result of the several reports certain basic requirements concerning graduate education were established: graduation from a Class A medical school, plus the completion of an internship in an acceptable hospital.

<sup>43</sup> Baltimore, Boston, Chicago, Cleveland, Denver, Galveston, Iowa City, Minneapolis, Nashville, New Orleans, New York, Philadelphia, Portland (Oregon), St. Louis, San Francisco, Washington, D. C.

<sup>44</sup> Alabama, Arizona, Canal Zone, Colorado, Connecticut, Delaware, Georgia, Hawaii, Idaho, Illinois, Iowa, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Porto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, Wyoming.

The term of study requisite in many of the specialties was set forth as follows:

| FIELD                       | YEARS<br>ESSENTIAL | FIELD                       | YEARS<br>ESSENTIAL |
|-----------------------------|--------------------|-----------------------------|--------------------|
| Surgery, general . . . . .  | 3                  | Internal medicine . . . . . | 3                  |
| Surgery, orthopedic . . . . | 3                  | Pediatrics . . . . .        | 3                  |
| Surgery, genito-urinary . . | 3                  | Neuropsychiatry . . . . .   | 3                  |
| Gynecology and obstetrics . | 3                  | Dermatology . . . . .       | 2                  |
| Ophthalmology . . . . .     | 2                  | Public health and hygiene . | 2                  |
| Otolaryngology . . . . .    | 2                  |                             |                    |

It was further stipulated that a student should advance from a review of the basic sciences to the third year of graduate study, when he was expected to assume definite responsibility in the care of patients in his specialty.

Since 1922 graduate work in many departments of medicine has been increasing, and may shortly be expected to be on a par, in many departments and schools, with the training offered by various European medical institutions. Prominent among the schools offering graduate instruction in clinical medicine may be mentioned Tulane, Johns Hopkins, Harvard University, Mayo Foundation (University of Minnesota), Washington University, Columbia University, New York Post-Graduate Medical College, and the University of Pennsylvania Graduate School. In 1926-1927 there were, all together, 2336 graduate students enrolled, of whom 1019 were graduates within comparatively recent years and had secured interne training. Of the entire number of students, 570 had been in practice less than five years; 557, between five and ten years; 353, from ten to fifteen years; and 339, from fifteen to twenty years. In other words, 53.5 per cent had engaged in practice from five to twenty years. Of the students undertaking graduate study, 328 registered for work in eye, ear, nose, and throat; 276, in general surgery; 275, in general medicine; 231, in pediatrics; 134, in obstetrics and gynecology; and 126, in public health.

Some schools are arranging courses of such character that students may register in the graduate school of the university as candidates for an advanced degree in any one of the pre-medical sciences and many of the medical specialties; for example, several schools offer registration in the graduate college leading to the degree of Master of Science in surgery, medicine, or midwifery, and some of the same schools are affording opportunities for registration leading to the degree of Doctor of Philosophy in surgery, the principal line of investigation being research in surgery, with the first minor in pathology and the second

minor in physiology, biochemistry, bacteriology, or any of the pre-clinical sciences into which the problem leads.

There is an essential difference between graduate work of this character and the so-called postgraduate work which has hitherto carried the name of postgraduate medical education, usually conducted in short, intensive courses, varying from a few weeks to a year, the institution and the professors conducting them, in many instances, for profit. The terms "graduate" and "postgraduate" clearly indicate different types. "Postgraduate" may mean any course of indefinite length and seriousness undertaken by the student subsequent to graduation. The term "graduate" should be reserved for those students registered in the graduate school of a university—candidates for a higher degree and subject to the rules of the graduate school. The members of the medical faculty who are competent to undertake graduate work should be members of the graduate faculty of the university. There are now forty-one graduate schools approved by the Council on Medical Education of the A. M. A., only two of which are well-organized university graduate schools of medicine.

#### AGENCIES DEALING WITH MEDICAL EDUCATION

Among the agencies dealing with medical education and coöperating in the raising of the standards should be named, first, the American Medical Association, working through its Council on Medical Education; second, the Association of American Medical Colleges; third, the Federation of State Medical Licensing Boards; fourth, the Carnegie Foundation for the Advancement of Teaching; fifth, the General Education Board and the Rockefeller Foundation; sixth and last, but not least, the medical schools themselves and the universities that have been willing to devote general endowment funds to increased efficiency of instruction and to the maintenance of higher standards.

The part played by the Federation of State Licensing Boards has been all-important. Only through the ruling of the state boards, backed by legal authority in refusing to examine and license the poorly trained graduates of low-grade medical schools, has the marked advance been possible. Until the medical examining boards of the several states refused to examine and license medical graduates, all moves for reform were futile. Promptly upon the coöperation of these boards inefficient schools were for the most part eliminated.

The Association of American Medical Colleges, powerless in its attempts to effect important reforms, has proved a great coöperating

factor with the Council on Medical Education, and has greatly increased the efficiency of its member colleges in the teaching of medicine by productive studies on the curriculum, and the subject matter and teaching methods of each branch. It is safe to say that owing to the activities of the Association of American Medical Colleges instruction has been greatly improved, correlation of studies emphasized, and the curriculum shorn of its overloaded character.

#### SPECIALIZATION

The question of what becomes of the medical graduate has been answered in a preliminary way by a study undertaken by Weiskotten.<sup>45</sup> The study shows that there is a definite tendency on the part of graduates in medicine to limit themselves to a specialty after a few years of general practice. Of the graduates of the year 1915, 22.5 per cent are today engaged in general practice, 35.6 per cent are engaged in general practice but are giving some attention to a specialty, 40.9 per cent are limiting themselves to a specialty, and 1.0 per cent are not practicing. Of the graduates of 1920, 23.8 per cent are in general practice, 40.4 per cent are in general practice but are giving some attention to a specialty, 35.0 per cent are limiting themselves to a specialty, and 0.8 per cent are not practicing. Of the specialties, eye, ear, nose, and throat claim the largest percentage; in these are 22.5 per cent of the 1915 graduates and 18.1 per cent of the 1920 graduates. Internal medicine claims 18.1 per cent of the 1915 graduates and 18.3 per cent of the 1920 graduates; surgery, 20.2 per cent of the 1915 graduates and 15.5 per cent of the 1920 graduates; pediatrics, 5.9 per cent of the 1915 graduates and 11.2 per cent of the 1920 graduates. Other specialties, such as gynecology and obstetrics, neurology and psychiatry, urology, radiology, clinical pathology, and dermatology, each claim a small percentage. Of the 1915 graduates now engaged in the practice of a specialty, 30.2 per cent entered upon their specialty without experience in general practice; 6.4 per cent, within two years; 22.4 per cent within from two to four years; 33.8 per cent, within from five to nine years; 4.8 per cent, after ten years or more of general practice; 2.4 per cent did not report. Of the 1920 graduates, 51 per cent entered upon the practice of a specialty without previous general practice; 13.4 per cent, within two years; 26.8 per cent, within from two to four years; 6.0 per cent, within from five to nine years;

<sup>45</sup> H. G. Weiskotten. Present Tendencies in Medical Practice. *Annual Congress on Medical Education. Proceedings*, 1928: 74-79.

2.8 per cent did not report. The tendency toward special practice results from several factors:

1. Better training.
2. Increased opportunities for special training.
3. Desire on the part of the physician to practice some branch of medicine unusually well.
4. The demand on the part of the public for experts in the several departments of medicine.

### PRESENT STATUS

A picture of the present status of medical education in the United States may be obtained from a study of the tables on pages 336-447, compiled from medical-school data of 1928-1929.<sup>46</sup>

### CONCLUSION

Reviewing the progress made in American medical education, Dr. Abraham Flexner says: <sup>47</sup>

America has accomplished what at first sight looks like a transformation. Relatively viewed, progress in this country has been enormously greater than anywhere else. It affects every item that goes to make up a medical school. There were a hundred and fifty-odd schools, so-called, in this country fifteen years ago. That number has been practically cut in half. The weak schools in all sections of the country, particularly in the South and West, where they were most abundant, have been almost wholly eliminated. Some kind of order has been introduced in the matter of matriculation requirements, though the order is in many respects more apparent than real. Everywhere equipment and facilities have been improved.

Medicine is not now and never can be considered an exact science. It may utilize knowledge gained from exact science, and it may use its methods; but no rule of diagnosis and management can be made for the individual patient, inasmuch as no two individuals are exactly alike. The same disease attacking a million individuals at the same time would show individual variations in its clinical manifestations, and as a consequence the applied management of the case would differ with the individual. Medicine differs from law in that, although an exact precedent may be found in the etiological factor of the disease, the detailed or real sequence of disease phenomena cannot be exactly forecast.

<sup>46</sup> Report of the Council on Medical Education, American Medical Association, 1929.

<sup>47</sup> Abraham Flexner. *Medical Education, 1909-1924. Annual Congress on Medical Education. Proceedings, 1924.*

TABLE III

KEY. E, Eclectic; H, Homoeopathic; N, Nondescript

(See page 341 for footnotes explaining reference letters in this table.)

| NAME OF MEDICAL COLLEGE                     | LOCATION      | POPULATION OF CITY | CLASSIFICATION | NUMBER OF STUDENTS |       | NUMBER OF TEACHERS |
|---|---------------|--------------------|----------------|--------------------|-------|--------------------|
|   |               |                    |                | Men                | Women |                    |
| <i>Alabama</i>                              |               |                    |                |                    |       |                    |
| University of Alabama*                      | Tuscaloosa    | 13,300             | A              | 102                | —     | 18                 |
| <i>Arkansas</i>                             |               |                    |                |                    |       |                    |
| University of Arkansas <sup>a</sup>         | Little Rock   | 79,200             | A              | 158                | —     | 69                 |
| <i>California</i>                           |               |                    |                |                    |       |                    |
| College of Medical Evangelists <sup>d</sup> | Los Angeles   | 576,673            | A              | 315                | 25    | 220                |
| Stanford University <sup>d</sup>            | San Francisco | 583,300            | A              | 170                | 13    | 196                |
| University of California <sup>a, d</sup>    | San Francisco | 583,300            | A              | 189                | 32    | 280                |
| University of Southern California           | Los Angeles   | 576,673            | A              | 49                 | 5     | 16                 |
| <i>Colorado</i>                             |               |                    |                |                    |       |                    |
| University of Colorado <sup>a</sup>         | Denver        | 294,200            | A              | 181                | 11    | 160                |
| <i>Connecticut</i>                          |               |                    |                |                    |       |                    |
| Yale University                             | New Haven     | 187,900            | A              | 190                | 17    | 190                |
| <i>District of Columbia</i>                 |               |                    |                |                    |       |                    |
| Georgetown University                       | Washington    | 552,000            | A              | 473                | —     | 165                |
| George Washington University                | Washington    | 552,000            | A              | 279                | 11    | 193                |
| Howard University                           | Washington    | 552,000            | A              | 225                | 9     | 62                 |

\*Gives only the first two years of the medical course.



|   |                          |           |   |     |    |     |
|---|--------------------------|-----------|---|-----|----|-----|
| <i>Georgia</i>                                      | Atlanta                  | 255,100   | A | 191 | —  | 140 |
| Emory University . . . . .                          | Augusta                  | 56,700    | A | 130 | 5  | 71  |
| <i>Illinois</i>                                     |                          |           |   |     |    |     |
| Loyola University <sup>d</sup> . . . . .            | Chicago                  | 3,157,400 | A | 442 | 19 | 221 |
| Northwestern University <sup>d</sup> . . . . .      | Chicago                  | 3,157,400 | A | 490 | 12 | 326 |
| University of Chicago (Rush) <sup>d</sup> . . . . . | Chicago                  | 3,157,400 | A | 319 | 29 | 241 |
| University of Chicago . . . . .                     | Chicago                  | 3,157,400 | A | 212 | 26 | 144 |
| University of Illinois <sup>a, d</sup> . . . . .    | Chicago                  | 3,157,400 | A | 492 | 17 | 254 |
| <i>Indiana</i>                                      |                          |           |   |     |    |     |
| Indiana University <sup>a</sup> . . . . .           | Bloomington-Indianapolis | 382,100   | A | 403 | 14 | 230 |
| <i>Iowa</i>   |                          |           |   |     |    |     |
| State University of Iowa <sup>a</sup> . . . . .     | Iowa City                | 16,500    | A | 458 | 25 | 94  |
| <i>Kansas</i>                                       |                          |           |   |     |    |     |
| University of Kansas <sup>a, b</sup> . . . . .      | Lawrence-Kansas City     | 509,300   | A | 210 | 13 | 138 |
| <i>Kentucky</i>                                     |                          |           |   |     |    |     |
| University of Louisville . . . . .                  | Louisville               | 329,400   | A | 318 | 4  | 122 |
| <i>Louisiana</i>                                    |                          |           |   |     |    |     |
| Tulane University of Louisiana . . . . .            | New Orleans              | 429,400   | A | 424 | 14 | 153 |
| <i>Maryland</i>                                     |                          |           |   |     |    |     |
| Johns Hopkins University . . . . .                  | Baltimore                | 830,400   | A | 247 | 36 | 325 |
| University of Maryland <sup>a</sup> . . . . .       | Baltimore                | 830,400   | A | 399 | 13 | 225 |
| <i>Massachusetts</i>                                |                          |           |   |     |    |     |
| Boston University . . . . .                         | Boston                   | 799,200   | A | 189 | 25 | 159 |
| Harvard University . . . . .                        | Boston                   | 799,200   | A | 515 | —  | 407 |
| Tufts College . . . . .                             | Boston                   | 799,200   | A | 470 | 23 | 210 |

TABLE III (CONTINUED)

| NAME OF MEDICAL COLLEGE   | LOCATION    | POPULATION OF CITY | CLASSIFICATION | NUMBER OF STUDENTS |       | NUMBER OF TEACHERS |
|---|-------------|--------------------|----------------|--------------------|-------|--------------------|
|   |             |                    |                | Men                | Women |                    |
| <i>Michigan</i>   |             |                    |                |                    |       |                    |
| University of Michigan <sup>a</sup> . . . . .                     | Ann Arbor   | 22,700             | A              | 634                | 30    | 118                |
| Detroit College of Medicine and Surgery <sup>a, d</sup> . . . . . | Detroit     | 1,378,900          | A              | 246                | 4     | 134                |
| <i>Minnesota</i>  |             |                    |                |                    |       |                    |
| University of Minnesota <sup>a, d</sup> . . . . .                 | Minneapolis | 455,900            | A              | 461                | 23    | 311                |
| <i>Mississippi</i>  |             |                    |                |                    |       |                    |
| University of Mississippi <sup>a</sup> . . . . .                  | Oxford      | 2,150              | A              | 62                 | 1     | 17                 |
| <i>Missouri</i>   |             |                    |                |                    |       |                    |
| University of Missouri <sup>a</sup> . . . . .                     | Columbia    | 10,700             | A              | 80                 | —     | 31                 |
| St. Louis University . . . . .                                    | St. Louis   | 848,100            | A              | 536                | —     | 262                |
| Washington University . . . . .                                   | St. Louis   | 848,100            | A              | 291                | 9     | 227                |
| <i>Nebraska</i>   |             |                    |                |                    |       |                    |
| Creighton University . . . . .                                    | Omaha       | 222,800            | A              | 198                | 2     | 100                |
| University of Nebraska <sup>a</sup> . . . . .                     | Omaha       | 222,800            | A              | 308                | 4     | 131                |
| <i>New Hampshire</i>  |             |                    |                |                    |       |                    |
| Dartmouth College <sup>a</sup> . . . . .                          | Hanover     | 1,551              | A              | 39                 | —     | 19                 |
| <i>New York</i>   |             |                    |                |                    |       |                    |
| Albany Medical College . . . . .                                  | Albany      | 120,400            | A              | 119                | 3     | 83                 |
| University of Buffalo . . . . .                                   | Buffalo     | 555,800            | A              | 273                | 6     | 208                |

\* Gives only the first two years of the medical course.

|  |               |                      |   |     |    |     |
|--|---------------|----------------------|---|-----|----|-----|
| Columbia University . . . . .                      | New York City | 6,017,500            | A | 383 | 37 | 589 |
| Cornell University . . . . .                       | New York City | 6,017,500            | A | 222 | 37 | 228 |
| Long Island College Hospital . . . . .             | New York City | 2,308,500            | A | 432 | 8  | 264 |
| New York Homeopathic College H . . . . .           | New York City | 6,017,500            | A | 320 | 7  | 136 |
| University and Bellevue Hospital . . . . .         | New York City | 6,017,500            | A | 456 | 21 | 224 |
| University of Rochester . . . . .                  | Rochester     | 328,200              | A | 99  | 10 | 123 |
| Syracuse University . . . . .                      | Syracuse      | 199,300              | A | 170 | 11 | 162 |
| <i>North Carolina</i>                              |               |                      |   |     |    |     |
| University of North Carolina* . . . . .            | Chapel Hill   | 1,483                | A | 71  | 5  | 12  |
| Wake Forest College* . . . . .                     | Wake Forest   | 1,425                | A | 53  | 1  | 16  |
| <i>North Dakota</i>                                |               |                      |   |     |    |     |
| University of North Dakota** . . . . .             | Grand Forks   | 15,400               | A | 55  | 2  | 13  |
| <i>Ohio</i>  |               |                      |   |     |    |     |
| Eclectic Medical College E . . . . .               | Cincinnati    | 413,700              | B | 35  | —  | 46  |
| University of Cincinnati <sup>a, d</sup> . . . . . | Cincinnati    | 413,700              | A | 256 | 13 | 249 |
| Western Reserve University . . . . .               | Cleveland     | 1,010,300            | A | 227 | 16 | 199 |
| Ohio State University <sup>a</sup> . . . . .       | Columbus      | 299,000              | A | 312 | 16 | 106 |
| <i>Oklahoma</i>                                    |               |                      |   |     |    |     |
| University of Oklahoma <sup>a</sup> . . . . .      | Oklahoma City | 91,295               | A | 189 | 3  | 103 |
| <i>Oregon</i>                                      |               |                      |   |     |    |     |
| University of Oregon <sup>a</sup> . . . . .        | Portland      | 258,288 <sup>b</sup> | A | 215 | 14 | 196 |
| <i>Pennsylvania</i>                                |               |                      |   |     |    |     |
| Hahnemann Medical College H . . . . .              | Philadelphia  | 2,064,200            | A | 430 | —  | 130 |
| Jefferson Medical College . . . . .                | Philadelphia  | 2,064,200            | A | 585 | —  | 216 |
| Temple University . . . . .                        | Philadelphia  | 2,064,200            | A | 217 | 3  | 149 |
| University of Pennsylvania . . . . .               | Philadelphia  | 2,064,200            | A | 476 | 13 | 279 |

\* Gives only the first two years of the medical course.

TABLE III (CONTINUED)

| NAME OF MEDICAL COLLEGE                           | LOCATION        | POPULATION OF CITY | CLASSIFICATION | NUMBER OF STUDENTS |       | NUMBER OF TEACHERS |
|---|-----------------|--------------------|----------------|--------------------|-------|--------------------|
|   |                 |                    |                | Men                | Women |                    |
| <i>Pennsylvania</i> (continued)                   |                 |                    |                |                    |       |                    |
| Woman's Medical College of Pennsylvania . . . . . | Philadelphia    | 2,064,200          | A              | —                  | 98    | 78                 |
| University of Pittsburgh . . . . .                | Pittsburgh      | 673,800            | A              | 246                | 15    | 207                |
| <i>South Carolina</i>                             |                 |                    |                |                    |       |                    |
| Medical College of South Carolina .               | Charleston      | 75,900             | A              | 146                | 7     | 65                 |
| <i>South Dakota</i>                               |                 |                    |                |                    |       |                    |
| University of South Dakota * <sup>a</sup> . .     | Vermilion       | 2,590              | A              | 52                 | —     | 11                 |
| <i>Tennessee</i>                                  |                 |                    |                |                    |       |                    |
| University of Tennessee <sup>a</sup> . . . . .    | Memphis         | 190,200            | A              | 367                | 11    | 188                |
| McHerry Medical College . . . . .                 | Nashville       | 139,600            | A              | 215                | 1     | 45                 |
| Vanderbilt University . . . . .                   | Nashville       | 139,600            | A              | 170                | 11    | 175                |
| <i>Texas</i>                                      |                 |                    |                |                    |       |                    |
| Baylor University . . . . .                       | Dallas          | 217,800            | A              | 342                | 14    | 126                |
| University of Texas <sup>a</sup> . . . . .        | Galveston       | 50,600             | A              | 263                | 12    | 58                 |
| <i>Utah</i>                                       |                 |                    |                |                    |       |                    |
| University of Utah * . . . . .                    | Salt Lake City  | 138,000            | A              | 54                 | 1     | 16                 |
| <i>Vermont</i>                                    |                 |                    |                |                    |       |                    |
| University of Vermont <sup>a</sup> . . . . .      | Burlington      | 24,300             | A              | 131                | 9     | 60                 |
| <i>Virginia</i>                                   |                 |                    |                |                    |       |                    |
| Medical College of Virginia <sup>a</sup> . . .    | Richmond        | 194,400            | A              | 366                | 5     | 143                |
| University of Virginia <sup>a</sup> . . . . .     | Charlottesville | 11,305             | A              | 236                | 7     | 69                 |

\* Gives only the first two years of the medical course.

|  |           |                      |           |   |     |    |     |  |  |
|--|-----------|----------------------|-----------|---|-----|----|-----|--|--|
| <i>West Virginia</i>                   |           |                      |           |   |     |    |     |  |  |
| West Virginia University* <sup>a</sup> | . . . . . | Morgantown           | 14,100    | A | 109 | 4  | 20  |  |  |
| <i>Wisconsin</i>                       |           |                      |           |   |     |    |     |  |  |
| University of Wisconsin <sup>a</sup>   | . . . . . | Madison              | 50,500    | A | 265 | 29 | 107 |  |  |
| Marquette University <sup>d</sup>      | . . . . . | Milwaukee            | 544,200   | A | 301 | 4  | 153 |  |  |
| <i>Philippine Islands</i>              |           |                      |           |   |     |    |     |  |  |
| University of Philippines              | . . . . . | Manila               | 285,306   | — | 270 | 59 | 92  |  |  |
| University of St. Thomas <sup>c</sup>  | . . . . . | Manila               | 285,306   | — | 701 | —  | 49  |  |  |
| <i>Canada</i>                          |           |                      |           |   |     |    |     |  |  |
| University of Alberta                  | . . . . . | Edmonton, Alberta    | 69,744    | A | 155 | 8  | 76  |  |  |
| Dalhousie University                   | . . . . . | Halifax, Nova Scotia | 60,000    | A | 127 | 3  | 62  |  |  |
| Queen's University                     | . . . . . | Kingston, Ontario    | 21,753    | A | 314 | —  | 54  |  |  |
| University of Toronto                  | . . . . . | Toronto, Ontario     | 569,899   | A | 646 | 71 | 262 |  |  |
| University of Western Ontario          | . . . . . | London, Ontario      | 60,959    | A | 126 | 11 | 77  |  |  |
| McGill University                      | . . . . . | Montreal, Quebec     | 1,032,385 | A | 448 | 15 | 196 |  |  |
| University of Montreal                 | . . . . . | Montreal, Quebec     | 1,032,385 | A | 168 | 1  | 105 |  |  |
| Laval University                       | . . . . . | Quebec, Quebec       | 133,000   | A | 258 | —  | 50  |  |  |
| University of Manitoba                 | . . . . . | Winnipeg, Manitoba   | 202,377   | A | 206 | 16 | 135 |  |  |

\* Gives only the first two years of the medical course.

<sup>a</sup> The following universities make an additional charge for nonresidents: Arkansas, \$300; California, \$300; Colorado, \$105; Georgia, \$200; Illinois, \$35; Indiana, \$75; Iowa, \$264; Kansas, \$50; Maryland, \$150; Michigan, \$80; Detroit, \$85; Minnesota, \$75; Mississippi, \$50; Missouri, \$10 per term; Nebraska, varies according to status of residence; North Dakota, \$70; Ohio, \$105; Cincinnati, \$50 (nonresidents of Cincinnati); Oklahoma, \$200; Oregon, \$60; South Dakota, \$50; Tennessee, \$125; Texas, \$150; Vermont, \$75; Virginia, \$20; Medical College of Virginia, \$100; West Virginia, \$250; and Wisconsin, \$150.

<sup>b</sup> The population given is for Kansas City, Kansas, and Kansas City, Missouri.

<sup>c</sup> The figures given are for the 1927-1928 session.

<sup>d</sup> Hospital internships required for graduation.

Table IV shows the enrollment by classes.

TABLE IV

KEY. E, Eclectic; H, Homeopathic; N, Nondescript.

| NAME OF MEDICAL SCHOOL                            | ENROLLED DURING 1927-1928 |             |            |             |        |
|---|---------------------------|-------------|------------|-------------|--------|
|   | First Year                | Second Year | Third Year | Fourth Year | Totals |
| University of Alabama*                            | 60                        | 42          | —          | —           | 102    |
| University of Arkansas . . . . .                  | 53                        | 32          | 29         | 44          | 158    |
| College of Medical Evangelists . . . . .          | 99                        | 92          | 80         | 69          | 340    |
| Stanford University . . . . .                     | 48                        | 43          | 49         | 43          | 183    |
| University of California . . . . .                | 59                        | 56          | 60         | 46          | 221    |
| University of Southern California† . . . . .      | 54                        | —           | —          | —           | 54     |
| University of Colorado . . . . .                  | 63                        | 42          | 46         | 41          | 192    |
| Yale University . . . . .                         | 52                        | 59          | 53         | 43          | 207    |
| Georgetown University . . . . .                   | 156                       | 130         | 113        | 74          | 473    |
| George Washington University . . . . .            | 90                        | 84          | 55         | 61          | 290    |
| Howard University . . . . .                       | 61                        | 62          | 68         | 43          | 234    |
| Emory University . . . . .                        | 64                        | 40          | 46         | 41          | 191    |
| University of Georgia . . . . .                   | 42                        | 27          | 31         | 35          | 135    |
| Loyola University . . . . .                       | 146                       | 121         | 92         | 102         | 461    |
| Northwestern University . . . . .                 | 129                       | 103         | 140        | 130         | 502    |
| University of Chicago‡ . . . . .                  | 119                       | 119         | —          | —           | 238    |
| University of Chicago (Rush Medical) . . . . .    | —                         | —           | 133        | 215         | 348    |
| University of Illinois . . . . .                  | 142                       | 115         | 119        | 133         | 509    |
| Indiana University . . . . .                      | 102                       | 110         | 104        | 101         | 417    |
| State University of Iowa . . . . .                | 166                       | 115         | 115        | 87          | 483    |
| University of Kansas . . . . .                    | 76                        | 54          | 50         | 43          | 223    |
| University of Louisville . . . . .                | 90                        | 74          | 90         | 68          | 322    |
| Tulane University of Louisiana . . . . .          | 129                       | 98          | 107        | 104         | 438    |
| Johns Hopkins University . . . . .                | 72                        | 75          | 70         | 66          | 283    |
| University of Maryland . . . . .                  | 136                       | 86          | 89         | 101         | 412    |
| Boston University . . . . .                       | 68                        | 49          | 48         | 49          | 214    |
| Harvard University . . . . .                      | 125                       | 118         | 137        | 135         | 515    |
| Tufts College . . . . .                           | 135                       | 126         | 118        | 114         | 493    |
| University of Michigan . . . . .                  | 159                       | 176         | 169        | 160         | 664    |
| Detroit College of Medicine and Surgery . . . . . | 69                        | 86          | 52         | 43          | 250    |
| University of Minnesota . . . . .                 | 132                       | 151         | 93         | 108         | 484    |
| University of Mississippi* . . . . .              | 36                        | 27          | —          | —           | 63     |
| University of Missouri* . . . . .                 | 40                        | 40          | —          | —           | 80     |
| St. Louis University . . . . .                    | 182                       | 120         | 123        | 111         | 536    |
| Washington University . . . . .                   | 83                        | 61          | 80         | 76          | 300    |
| Creighton University School of Medicine . . . . . | 55                        | 46          | 49         | 50          | 200    |
| University of Nebraska . . . . .                  | 100                       | 70          | 68         | 74          | 312    |
| Dartmouth Medical School* . . . . .               | 20                        | 19          | —          | —           | 39     |

\* Gives only the first two years of the medical course.

† Work of first two years will be offered 1929-1930; eventually a full medical course.

‡ Enrollment not given by years; half of total enrollment arbitrarily taken.

TABLE IV (CONTINUED)

| NAME OF MEDICAL SCHOOL                                  | ENROLLED DURING 1927-1928 |             |            |             |        |
|---|---------------------------|-------------|------------|-------------|--------|
|   | First Year                | Second Year | Third Year | Fourth Year | Totals |
| Albany Medical College . . . . .                        | 41                        | 35          | 22         | 24          | 122    |
| University of Buffalo . . . . .                         | 77                        | 69          | 68         | 65          | 279    |
| Columbia University . . . . .                           | 110                       | 103         | 104        | 103         | 420    |
| Cornell University . . . . .                            | 69                        | 70          | 57         | 63          | 259    |
| Long Island College Hospital . . . . .                  | 122                       | 108         | 107        | 103         | 440    |
| New York Homeopathic and Flower<br>Hospital H . . . . . | 102                       | 89          | 86         | 50          | 327    |
| University and Bellevue Hospital . . . . .              | 122                       | 122         | 128        | 105         | 477    |
| University of Rochester . . . . .                       | 36                        | 31          | 24         | 18          | 109    |
| Syracuse University . . . . .                           | 52                        | 42          | 46         | 41          | 181    |
| University of North Carolina*. . . . .                  | 42                        | 34          | —          | —           | 76     |
| Wake Forest College*. . . . .                           | 28                        | 26          | —          | —           | 54     |
| University of North Dakota*. . . . .                    | 31                        | 26          | —          | —           | 57     |
| Eclectic Medical College, Cincinnati E . . . . .        | —                         | —           | —          | 35          | 35     |
| University of Cincinnati . . . . .                      | 78                        | 63          | 61         | 67          | 269    |
| Western Reserve University . . . . .                    | 71                        | 60          | 60         | 52          | 243    |
| Ohio State University . . . . .                         | 100                       | 92          | 60         | 76          | 328    |
| University of Oklahoma . . . . .                        | 68                        | 39          | 47         | 38          | 192    |
| University of Oregon . . . . .                          | 66                        | 63          | 42         | 58          | 229    |
| Hahnemann Medical College, Philadel-<br>phia . . . . .  | 178                       | 108         | 80         | 64          | 430    |
| Jefferson Medical College, Philadelphia . . . . .       | 170                       | 131         | 142        | 142         | 585    |
| Temple University . . . . .                             | 64                        | 54          | 53         | 49          | 220    |
| University of Pennsylvania . . . . .                    | 112                       | 110         | 132        | 135         | 489    |
| Woman's Medical College of Penn-<br>sylvania . . . . .  | 37                        | 28          | 15         | 18          | 98     |
| University of Pittsburgh . . . . .                      | 67                        | 67          | 61         | 66          | 261    |
| Medical College of State of South<br>Carolina . . . . . | 42                        | 42          | 41         | 28          | 153    |
| University of South Dakota*. . . . .                    | 29                        | 23          | —          | —           | 52     |
| University of Tennessee . . . . .                       | 126                       | 87          | 93         | 72          | 378    |
| Meharry Medical College . . . . .                       | 67                        | 57          | 44         | 48          | 216    |
| Vanderbilt University . . . . .                         | 50                        | 41          | 49         | 41          | 181    |
| Baylor University . . . . .                             | 115                       | 91          | 88         | 62          | 356    |
| University of Texas . . . . .                           | 105                       | 80          | 43         | 47          | 275    |
| University of Utah*. . . . .                            | 29                        | 26          | —          | —           | 55     |
| University of Vermont . . . . .                         | 32                        | 31          | 47         | 30          | 140    |
| Medical College of Virginia . . . . .                   | 96                        | 85          | 100        | 90          | 371    |
| University of Virginia . . . . .                        | 70                        | 57          | 63         | 53          | 243    |
| West Virginia University*. . . . .                      | 66                        | 47          | —          | —           | 113    |
| University of Wisconsin . . . . .                       | 116                       | 97          | 41         | 40          | 294    |
| Marquette University . . . . .                          | 79 <sup>4</sup>           | 102         | 66         | 58          | 305    |
| Totals for 1929 . . . . .                               | 6277                      | 5304        | 4746       | 4551        | 20,878 |
| Totals for 1928 . . . . .                               | 6199                      | 5190        | 4646       | 4510        | 20,545 |
| Totals for 1927 . . . . .                               | 6009                      | 4993        | 4510       | 4150        | 19,662 |

\* Includes two irregular students.

Table V shows the changes that have occurred in student attendance in sectarian as compared with nonsectarian and, as a rule, better-grade colleges.

TABLE V

| YEAR | NON-SECTARIAN | HOMEO-PATHIC | ECLECTIC | PHYSIO-MEDICAL | NONDE-SCRIPT | TOTAL  |
|------|---------------|--------------|----------|----------------|--------------|--------|
| 1880 | 9,776         | 1220         | 830      | —              | —            | 11,826 |
| 1890 | 13,521        | 1164         | 719      | —              | —            | 15,404 |
| 1900 | 22,710        | 1909         | 522      | —              | —            | 25,171 |
| 1904 | 23,662        | 1309         | 1014     | 123            | 234          | 28,142 |
| 1910 | 20,136        | 867          | 455      | 49             | 19           | 21,526 |
| 1915 | 13,914        | 736          | 241      | —              | —            | 14,891 |
| 1919 | 12,137        | 397          | 86       | —              | 310          | 12,930 |
| 1920 | 12,930        | 386          | 93       | —              | 389          | 13,798 |
| 1925 | 17,652        | 410          | 148      | —              | —            | 18,200 |
| 1926 | 18,092        | 458          | 253      | —              | 37           | 18,840 |
| 1927 | 18,835        | 539          | 248      | —              | 40           | 19,662 |
| 1928 | 19,646        | 640          | 219      | —              | 40           | 20,545 |
| 1929 | 20,086        | 757          | 35       | —              | —            | 20,878 |

Table VI shows the graduates of nonsectarian in comparison with sectarian colleges.

TABLE VI

| YEAR | NON-SECTARIAN | HOMEO-PATHIC | ECLECTIC | PHYSIO-MEDICAL | NONDE-SCRIPT | TOTAL |
|------|---------------|--------------|----------|----------------|--------------|-------|
| 1880 | 2673          | 380          | 188      | —              | —            | 3241  |
| 1890 | 3853          | 380          | 221      | —              | —            | 4454  |
| 1900 | 4715          | 413          | 86       | —              | —            | 5214  |
| 1904 | 4190          | 371          | 146      | 20             | 20           | 5747  |
| 1910 | 4113          | 183          | 114      | 16             | 14           | 4440  |
| 1915 | 3286          | 195          | 55       | —              | —            | 3536  |
| 1920 | 2826          | 97           | 30       | —              | 94           | 3047  |
| 1922 | 2358          | 64           | 34       | —              | 73           | 2529  |
| 1925 | 3856          | 80           | 38       | —              | —            | 3974  |
| 1926 | 3801          | 80           | 64       | —              | 17           | 3962  |
| 1927 | 3864          | 90           | 67       | —              | 14           | 4035  |
| 1928 | 4070          | 123          | 55       | —              | 14           | 4262  |
| 1929 | 4299          | 113          | 34       | —              | —            | 4446  |



Table VII shows the changes in the number of colleges for sectarian and nonsectarian medicine.

TABLE VII

| YEAR | NON-SECTARIAN | HOMEO-PATHIC | ECLECTIC | PHYSIO-MEDICAL | NONDE-SCRIPT | TOTAL |
|------|---------------|--------------|----------|----------------|--------------|-------|
| 1850 | 44            | 3            | 4        | 1              | —            | 52    |
| 1860 | 53            | 6            | 4        | 2              | —            | 65    |
| 1870 | 60            | 8            | 5        | 2              | —            | 75    |
| 1880 | 76            | 14           | 8        | 2              | —            | 100   |
| 1890 | 106           | 16           | 9        | 2              | —            | 133   |
| 1900 | 126           | 22           | 9        | 2              | 1            | 160   |
| 1910 | 109           | 12           | 8        | 1              | 1            | 131   |
| 1920 | 76            | 5            | 1        | —              | 3            | 85    |
| 1925 | 74            | 2            | 1        | —              | 3            | 80    |
| 1926 | 74            | 2            | 2        | —              | 1            | 79    |
| 1927 | 74            | 2            | 3        | —              | 1            | 80    |
| 1928 | 74            | 2            | 3        | —              | 1            | 80    |
| 1929 | 73            | 2            | 1        | —              | —            | 76    |

Table VIII shows the students and graduates according to classification.

TABLE VIII

| YEAR | STUDENTS |          |         |          |         |          |
|------|----------|----------|---------|----------|---------|----------|
|      | Class A  | Per Cent | Class B | Per Cent | Class C | Per Cent |
| 1913 | 11,122   | 65.4     | 4138    | 24.4     | 1735    | 10.2     |
| 1915 | 11,314   | 76.0     | 2668    | 17.9     | 909     | 6.1      |
| 1920 | 12,320   | 89.2     | 680     | 4.8      | 798     | 6.0      |
| 1925 | 17,497   | 96.2     | 554     | 3.0      | 149     | 0.8      |
| 1926 | 17,887   | 95.0     | 582     | 3.0      | 371     | 2.0      |
| 1927 | 18,754   | 95.4     | 564     | 2.0      | 344     | 1.7      |
| 1928 | 19,794   | 96.3     | 371     | 1.8      | 380     | 1.9      |
| 1929 | 20,516   | 98.2     | 362     | 1.8      | —       | —        |

| YEAR | GRADUATES |          |         |          |         |          |
|------|-----------|----------|---------|----------|---------|----------|
|      | Class A   | Per Cent | Class B | Per Cent | Class C | Per Cent |
| 1913 | 2539      | 63.8     | 1050    | 26.4     | 392     | 9.8      |
| 1915 | 2629      | 74.4     | 688     | 19.4     | 219     | 6.2      |
| 1920 | 2690      | 88.4     | 152     | 5.0      | 205     | 6.6      |
| 1925 | 3852      | 96.3     | 118     | 3.0      | 4       | 0.8      |
| 1926 | 3732      | 94.2     | 130     | 3.3      | 100     | 2.5      |
| 1927 | 3798      | 94.1     | 117     | 2.9      | 120     | 3.0      |
| 1828 | 4091      | 96.0     | 96      | 2.2      | 75      | 1.8      |
| 1929 | 4362      | 89.1     | 84      | 1.9      | —       | —        |

Table IX shows the fees of the colleges of the several classes.<sup>48</sup>

TABLE IX

|                       | COLLEGES | PER CENT |
|-----------------------|----------|----------|
| \$50 to 100 . . . . . | 3        | 4.0      |
| 100 to 149 . . . . .  | 6        | 8.0      |
| 150 to 199 . . . . .  | 11       | 14.7     |
| 200 to 249 . . . . .  | 9        | 12.0     |
| 250 to 299 . . . . .  | 7        | 9.3      |
| 300 to 349 . . . . .  | 12       | 16.0     |
| 350 to 399 . . . . .  | 13       | 17.3     |
| 400 to 499 . . . . .  | 7        | 9.3      |
| 500 to 599 . . . . .  | 6        | 8.0      |
| 600 to 699 . . . . .  | 1        | 1.4      |
| Totals* . . . . .     | 72       | 100.0    |

\* Average fee per student in all colleges, \$292.

Table X shows the average age of the graduates of 1929.

TABLE X

|  | NUMBER OF GRADUATES | AVERAGE AGE |
|--|---------------------|-------------|
| University of Arkansas . . . . .         | 43                  | 27.7        |
| College of Medical Evangelists . . . . . | 65                  | 27.7*       |
| Stanford University . . . . .            | 48                  | 28.1*       |
| University of California . . . . .       | 40                  | 27.7*       |
| University of Colorado . . . . .         | 40                  | 25.9        |
| Yale University . . . . .                | 39                  | 25.9        |
| Georgetown University . . . . .          | 75                  | 25.7        |
| George Washington University . . . . .   | 61                  | 26.3        |
| Howard University . . . . .              | 44                  | 28.4        |
| Emory University . . . . .               | 40                  | 25.2        |
| University of Georgia . . . . .          | 35                  | 26.3        |
| Loyola University . . . . .              | 80                  | 26.8*       |
| Northwestern University . . . . .        | 121                 | 26.6*       |
| University of Chicago . . . . .          | 149                 | 27.6*       |
| University of Illinois . . . . .         | 125                 | 26.0*       |
| Indiana University . . . . .             | 100                 | 27.0        |
| State University of Iowa . . . . .       | 85                  | 25.9        |
| University of Kansas . . . . .           | 43                  | 28.4        |
| University of Louisville . . . . .       | 68                  | 26.7        |
| Tulane University of Louisiana . . . . . | 103                 | 25.5        |

\* The average age reported by these colleges is one year more than that given here, since they require an interne year before degrees are granted.

<sup>48</sup> Based upon fees charged resident students.

TABLE X (CONTINUED)

|  | NUMBER OF<br>GRADUATES | AVERAGE<br>AGE |
|--|------------------------|----------------|
| Johns Hopkins University . . . . .                   | 66                     | 26.6           |
| University of Maryland . . . . .                     | 103                    | 25.9           |
| Boston University . . . . .                          | 49                     | 27.4           |
| Harvard University . . . . .                         | 137                    | 26.3           |
| Tufts College . . . . .                              | 113                    | 25.9           |
| Detroit College of Medicine and Surgery . . . . .    | 47                     | 27.8*          |
| University of Michigan . . . . .                     | 158                    | 26.6           |
| University of Minnesota . . . . .                    | 119                    | 26.6*          |
| St. Louis University . . . . .                       | 109                    | 26.5           |
| Washington University . . . . .                      | 74                     | 25.9           |
| Creighton University . . . . .                       | 50                     | 26.1           |
| University of Nebraska . . . . .                     | 76                     | 26.8           |
| Albany Medical College . . . . .                     | 24                     | 28.4           |
| Columbia University . . . . .                        | 107                    | 26.6           |
| Cornell University . . . . .                         | 63                     | 26.2           |
| Long Island College Hospital . . . . .               | 103                    | 24.7           |
| New York Homeopathic and Flower Hospital . . . . .   | 50                     | 25.9           |
| Syracuse University . . . . .                        | 40                     | 26.1           |
| University and Bellevue Hospital . . . . .           | 104                    | 25.8           |
| University of Buffalo . . . . .                      | 63                     | 25.8           |
| University of Rochester . . . . .                    | 18                     | 26.9           |
| Eclectic Medical College . . . . .                   | 34                     | 27.2           |
| Ohio State University . . . . .                      | 79                     | 27.3           |
| University of Cincinnati . . . . .                   | 67                     | 26.0*          |
| Western Reserve University . . . . .                 | 51                     | 26.6           |
| University of Oklahoma . . . . .                     | 38                     | 27.2           |
| University of Oregon . . . . .                       | 56                     | 27.5           |
| Hahnemann Medical College of Philadelphia . . . . .  | 63                     | 26.4           |
| Jefferson Medical College of Philadelphia . . . . .  | 142                    | 26.2           |
| Temple University . . . . .                          | 48                     | 26.2           |
| University of Pennsylvania . . . . .                 | 134                    | 26.2           |
| University of Pittsburgh . . . . .                   | 66                     | 26.3           |
| Woman's Medical College of Pennsylvania . . . . .    | 18                     | 28.4           |
| Medical College of State of South Carolina . . . . . | 26                     | 26.2           |
| Meharry Medical College . . . . .                    | 48                     | 29.3           |
| University of Tennessee . . . . .                    | 72                     | 26.1           |
| Vanderbilt University . . . . .                      | 43                     | 26.3           |
| Baylor University . . . . .                          | 62                     | 26.6           |
| University of Texas . . . . .                        | 51                     | 25.8           |
| University of Vermont . . . . .                      | 30                     | 27.6           |
| Medical College of Virginia . . . . .                | 90                     | 26.9           |
| University of Virginia . . . . .                     | 53                     | 26.0           |
| Marquette University . . . . .                       | 54                     | 26.8*          |
| University of Wisconsin . . . . .                    | 44                     | 26.6           |
| Total number of graduates . . . . .                  | 4446                   | 26.3           |

\* The average age reported by these colleges is one year more than that given here, since they require an interne year before degrees are granted.

The rule of law applies to every individual case in a given state; in medicine the rule varies with the individual. There is no set rule of progress or conclusion in any disease entity. It is therefore required that, in addition to the power of logical thinking, the physician shall develop, probably to a larger degree than is required in any other profession, that thinking ability known as judgment. He must be more acute than the lawyer in ascertaining facts, and he has, like the lawyer, to deal with the human element. In addition he has his own skill in physical diagnosis, and the laboratories with many precision determinations. Given all the ascertainable facts concerning the disease, he still has the individual to deal with, and his management or procedure will be determined by his judgment. While a rule of procedure may be established for the general average, yet the details of management will vary in every case. Then, too, as the late Francis Peabody has so well said,<sup>49</sup> "Medicine must be taught as a vital, expanding subject." In other words, the procedure of tomorrow may be different from that of today, owing to new light from some research laboratory or clinic. Medicine differs from engineering even more markedly than from the law. Although relative measurements may be made of the resistance of the organisms to a given disease, the power of recuperation, etc., no exact computations of the strength of the materials can be made.

The graduate in medicine must always remain a student. For him graduation is in reality a commencement. Each year, even each month, of his subsequent career will bring advances and new discoveries in medical science: discoveries to which he may possibly contribute, advances of which he must at least have accurate knowledge. There is so much for the student to learn today as compared with the field covered by medicine a generation ago that to cover it thoroughly is recognized as an impossible task.

The student can absorb and retain only a small portion of his course. Facts as isolated facts, unless correlated, are lost. Teaching in too great detail, to the exclusion of giving a broad conception of the fundamental principles, is educational homicide. The student must have time to think,—time to solve a given problem through a comprehensive understanding of the principles involved.

Medical education seeks, not the amassing of facts or the development of the encyclopedic type of mind, but rather the discovery and development of the inquiring type of intellect, ready to approach a new problem from the standpoint of basic principles.

<sup>49</sup> *Annual Congress on Medical Education. Proceedings, 1928.*

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## CHAPTER XI

### THE GRADUATE SCHOOL

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#### PURPOSES

The purposes of the work called graduate or postgraduate are principally two: (1) the advancement of knowledge and (2) the professional training of students who have already secured the bachelor's degree and desire to pursue further studies in preparation for professional work. The specific professional work for which most of such students are preparing is that of teaching in universities, in colleges, and to some extent in normal and secondary schools. A small number are preparing for administration in the public-school system; another class is preparing for research positions in commerce or industry. Still another type of advanced work is that carried on by those who have received some professional degree and seek further training in a special line. Thus, the student of medicine may wish to fit himself for ophthalmology or otology, and hence, after his general course and degree of M.D., may pursue further special studies. The candidate for the ministry or in law may wish to fit himself for teaching those subjects in professional schools.

The last class is as yet comparatively small; the great majority of students to be considered in this chapter are enrolled in the graduate schools of arts, literature, and science. The registration in such schools is made up principally of those who expect to be teachers, and secondarily, of those preparing for research positions. Besides these two principal purposes of the graduate school there is a third somewhat incidental purpose, namely, that of an additional year of liberal study.

It tends to present a well-rounded program of studies whereby any student who is sufficiently mature really to want to study and has had an elementary education which has made him able to read intelligently and know what he is about, may acquire either a well-rounded education or advance to specialization and research. . . . he can have the intellectual time of his life.<sup>1</sup>

<sup>1</sup> F. J. E. Woodbridge. Maintaining Standards without Excessive Standardization. *Association of American Universities. Journal of Proceedings and Addresses*, 1924: 51-58.

A question is inevitably raised by the presence of this double purpose. There seems to be an underlying assumption that it is not only theoretically possible but practically wise to combine in one organization two distinct aims,—that the advancement of knowledge can be successfully prosecuted in conjunction with advanced education, that is, with the education of graduate students. This, as Dean Woodbridge has pointed out,<sup>2</sup> really splits into two assumptions: on the one hand, that the advancement of knowledge can be favorably pursued under the conditions of the graduate school in the university, and particularly that the possession of a bachelor's degree should be regarded as essential; and, on the other hand, that the professional purpose of preparing students for teaching positions by further study after the bachelor's degree is best promoted by the method of research and the advancement of knowledge. Both these assumptions are open to challenge, and both to some extent have been challenged.

First, as to the best methods for the advancement of knowledge. A rival to the university in this field is found in various scientific institutes, notably the Carnegie Institute, the Rockefeller Institute, the Wistar Institute. These command the entire time of a scientific staff, which is left free to pursue work of investigation or discovery without the added necessity of giving time to instruction. It may be presumed that the advisers of those who have established these foundations have considered well the relative advantages of the two types of institution, and have decided in favor of the institute type as the wiser investment of funds. A strong presumption is thus created for the separation of research from education. But, admitting the presence of strong considerations which favor such a separation, there are two counterbalancing considerations which have thus far maintained the importance of continuing the combination of the two purposes of research and education by universities. The first is that of training younger investigators in order to maintain a continuous staff not only for universities but even for the research institutes,—because institutes seldom undertake any but the most advanced educational work. They prefer to be able to select men who can at once enter upon responsible research. In the second place, despite the fact that in universities a certain amount of time is necessarily devoted to instruction of students rather than to research exclusively, it is the general testimony that many if not most investigators are stimulated by the presence of younger men whom they

<sup>2</sup> F. J. E. Woodbridge. Maintaining Standards without Excessive Standardization. *Association of American Universities. Journal of Proceedings and Addresses*, 1924: 51-58.

guide, and that the very necessity of explaining and analyzing problems to learners is a stimulating condition for the best work. It is therefore probable that, while existing institutes will be maintained and perhaps supplemented by others, the greater amount of research will continue to be carried on in connection with the work of training future investigators, that is, under university auspices.

### GRADUATE STUDY AS TEACHING PREPARATION

With regard to the second purpose, that of preparing teachers, the situation is more complicated. No one, so far as the writer is aware, advocates a plan for the preparation of teachers which excludes participation in the advancement of knowledge. But there are two points which need to be made clear if we are to have an intelligent opinion upon the question whether preparation for teachers is best gained under present conditions in our graduate schools. The first of these questions is, What is meant by the advancement of knowledge? The second is, Does the same type of work serve adequately for preparing university teachers, undergraduate teachers, and, to some extent, high-school teachers?

1. *Advancement of knowledge.* What is meant by advancement of knowledge? The term is and ought to be given a wide latitude, and emphasis may properly vary in different fields. But there are obviously two tendencies or types. The one emphasizes the addition of new facts; the other emphasizes the function of broad scholarship and of critical analysis and interpretation. Broadly speaking, the brilliant progress of the natural sciences has tended to emphasize the discovery of new facts. The social sciences and the humanities have perhaps been influenced by the method and example of the natural sciences, and have stressed what may fairly be called the factual, as opposed to the interpretative, aspects of their investigation. But this is certainly a swing of the pendulum which represents a narrow and one-sided conception of research, if the discovery of new facts is emphasized to the exclusion of interpretation and valuation. The critical activity of the widely read scholar, who can compare the products of human genius and bring into focus those elements and values which are precious, is as essential for the advancement of knowledge in fair proportion as a living and fruitful whole as is the addition of new facts to the present total. To deal with facts in a broadly philosophical spirit and to relate facts to values is at once the path of knowledge and the path of wisdom. Attention to this twofold emphasis in the advancement of knowledge is the first step toward a clearer understanding of the



failure of our present system to give adequate preparation to teachers. The type of advancement which emphasizes the factual has its proper place for the teacher in its attention to the concrete; but the other type, which relates facts to their historical background and fundamental principles, is the more genuinely educative and more humanly significant.

2. *Teacher types.* The second point in our inquiry as to whether the teacher can be well prepared by a graduate school which makes the advancement of knowledge primary is, What type of teacher have we in mind? Will the same program and method secure the best results for the three types of teacher who are at present found as students in our graduate schools, — namely, prospective teachers in graduate schools, prospective undergraduate teachers, and prospective high-school teachers?

The difficulty is least with the first type. If university teachers are to be themselves leaders of investigation, they should certainly come in contact with the actual process of investigation and take part in it as vigorously as possible. For their students the most stimulating influence is that of participating in some coöperative research, guided perhaps by the instructor, or else in the early selection of a problem which will lead on and out into broader fields. Even though the problem appear narrow at the outset, it is very likely to demand research into neighboring problems, so that sooner or later the student is likely to get education as well as knowledge. But for the undergraduate teacher there is at least a difference in emphasis. The undergraduate student is not, as is the graduate student, fitting himself for the profession of teaching. He may have in view law, or business, or literature, or various other occupations. He needs, above all, on the one hand a view of our best culture, an appreciation of the best that has been thought and said, and on the other hand an interpretation of our present world, the world of nature, of man and of society. The fact-finding type of knowledge has its limits for the undergraduate teacher, and if the undergraduate teacher disclaims any responsibility beyond that of providing opportunity for intellectual activity, those who are responsible for undergraduate education will probably refuse to recognize this evasion of the undergraduate teacher's task. What is true of the undergraduate teacher is true to a still greater degree of the high-school teacher. For both the undergraduate and the high-school teacher the second type of scholarship, namely, that which sees knowledge as an organic whole, which emphasizes background and interpretations and fundamental principles, is highly desirable.

3. *Merging of graduate school and college.* The third factor to be noted when we inquire as to the adequacy of our graduate schools as places for the preparation of teachers is that the graduate school is frequently merged with the college to such a degree as to prevent either the graduate school or the college from realizing its distinctive purpose. For the college, although originally established for a professional purpose, soon outgrew this, and is now, supposedly at least, nonprofessional. On the other hand, the graduate school is really professional, although it is open to the charge of protesting too much its immaculate freedom from vocational influences. Might it not better freely say, as do the law school, the medical school, the school of theology: "Yes, we teach subject matter, but we also recognize that the undergraduate and high-school teachers deal with boys and girls as well as with subject matter, and that there is such a thing as an art of teaching." The generally professed doctrine that the teacher is born and not made, whether adhered to because of evidence or because of disinclination on the part of the teacher to attempt any improvement of his skill, no doubt stands in the way of frank recognition of the complete function of the graduate schools.

As a result of the confused or at least the complex theory and practice as stated in the preceding paragraph, we have from time to time witnessed a challenge from the point of view of the colleges as to the desirability of attempting to combine the two aims of research and the professional preparation of teachers for colleges. Discussion has centered in the question whether the work for the Ph.D., which is presumably a work of research, is the best or even a suitable type of work for those whose field of work is to be the college rather than the research institute or even the graduate faculty. It has been charged that the intensive character of the investigation set for the Ph.D. prevents the broader scholarship which is desirable for the successful instructor and inspiring leader of undergraduates, and, further, that the extremely technical character of the work of the doctorate gives to the young doctor a false perspective as to the relative importance of the leading principles and the minor steps leading to those principles. The prospective doctor can seldom expect to make any significant contribution to the larger principles in his field; he is therefore driven to an attempt to clear up some obscure point of secondary or tertiary importance. It is alleged that it is difficult for him to free himself from this habit of thought and to present his subject to beginning students with a proper perspective, to make an appeal that shall awaken interest and enthusiasm in the beginner who as yet may be open-minded but is not necessarily committed to an interest in the subject matter.

## IMPORTANCE OF GRADUATE STUDY IN TEACHER TRAINING

Without attempting to weigh fairly the arguments for and against the union of the two purposes, namely, the advancement of knowledge and the preparation of teachers for their professional careers, certain suggestions may be offered. First, as to the advancement of knowledge. In addition to the two factors already mentioned — the need of discovering and finding investigators and the stimulating quality for the investigator of guiding younger men — there are two further considerations. The institute is more likely to be established for research in a particular field. It may lack stimulating contacts with workers in other fields, which are highly desirable. In the university all fields, or at least a large number of them, are represented. The stimulating contact with other workers enables the investigator to keep perspective and breadth. The faculty of a great university represents very nearly the scope of human knowledge. Its work is in miniature a unit of the total process. As a final consideration in favor of the university as a place for carrying on the major part, though not the entire work, of research, the selection of the objects of research and the broad direction of its trend are likely to be most generously and at the same time most wisely directed in the university atmosphere.

Granting, and indeed insisting upon, the importance of pure science and the enlargement of knowledge in every direction, and granting, further, that the pure science of today is often the useful science of tomorrow, it is still far from true that all pieces of research are of equal value if only each states or describes a fact, or that there is no choice whatever in possible lines of inquiry. The development of the powers of the investigator is certainly important, regardless of the intrinsic value of the results reached in a particular inquiry, and the creative, æsthetic interest in a development of truth is possibly the supreme type of intellectual satisfaction. Nevertheless, the possible bearing of truth upon the enlargement and enrichment of human life is certainly not to be forgotten, and this would seem to be most likely to have its due share in the direction of research when this is pursued in an institution of a broadly human character.

The second challenge to the system of combining advancement of knowledge with preparation of teachers comes from the colleges. In reply two things may be said. First, it is the general testimony of scholars that no influence is so inspiring as that of the man who is himself contributing to discovery and creative scholarship. There is a certain contagious enthusiasm begotten by creative work. Second, an important change takes place in the student's whole attitude when

he undertakes a piece of responsible research. One may place a very modest estimate upon the contributions made to important knowledge by all the Ph.D. theses of all our universities from their foundation, and still believe that nothing does so much, on the whole, for the student's development as the work of writing a thesis. Not merely the fact or facts brought to light, but the organization of material into a significant whole, is or should be an important feature of the thesis. In most fields of study, and even in a purely experimental subject, there is usually opportunity for placing the experiment in the general development of the field.

Those who guide instruction in graduate work may hold that participation in creative work is the greatest single factor in vivifying higher education, and that such a modest share in the active work of advancing knowledge as is represented by a doctor's thesis is a highly valuable factor in the development of the powers of the graduate student; but they need not blind themselves to the perfectly obvious fact that the great majority of these students are to become teachers,—that many of them will be teaching junior-college, even high-school students, and that the prosecution of intensive research in highly limited and technical fields is not all that is necessary in the way of preparation for responsibilities as a teacher. In the case of candidates for the master's degree, who may not contemplate further advanced work, the great difference between the work of the teacher in the most advanced fields and in secondary or to some extent in collegiate instruction should be kept in mind—namely, that the former is concerned almost entirely with subject matter, the latter with the human beings who are under instruction. Teachers' training courses in such subjects as Latin, mathematics, and modern languages are one way of meeting the situation. Perhaps it is not excessively optimistic to look forward to such further development of educational psychology as shall command the confidence of teachers of subject matter, who have thus far been hesitant as to the value of such work.

#### FUNCTIONS OF GRADUATE WORK IN ITS RELATIONS TO THE UNIVERSITY AS A WHOLE

More than any other division of the university the graduate school represents the living process of education. As such it should contribute toward that constant renewal in every line which is necessary to prevent stagnation. It might be supposed that, whereas theology would easily become rigid, medicine would of its own necessity maintain the attitude of investigation; but neither of these assumptions

has been found to hold good. Our theological and medical schools were established in many if not most cases as separate schools; they have now almost universally become connected with universities, to obtain the aid there available from cognate or underlying fields and to share in the general atmosphere of research. In many cases this connection is still somewhat loose. There may still be mutual distrust; the research man may regard the practitioner as limiting his scientific ambitions to the minimum necessary for state examinations, and the practitioner may in turn affect a supercilious attitude toward the "too theoretical" interests of the devotee of research; but the influence of a vigorous graduate school seems undoubtedly almost indispensable in widening the horizons and raising the standards of the professions.

If the influence of the graduate school upon the professional schools is in general stimulating and liberalizing, the influence upon undergraduate work is less clearly to the advantage of the latter. Undoubtedly the university spirit of fresh interpretation and of being in the forefront of the battle instead of living upon past achievement is or may be of the highest value. The good teacher will be alert to maintain contact with the advance of knowledge. "The mere teacher of average intelligence plays out before he reaches the age of fifty, for by that time he has fallen back a quarter of a century in his knowledge, and thus has no longer the goods to deliver to the oncoming generation." We may assume that the teacher will be stimulated by the presence of the graduate work.

The presence of graduate work is also believed by many to be a favorable influence in awakening the interest of the undergraduate. This is perhaps best seen in the case of the laboratory sciences, where the younger students easily come into contact with those engaged in advanced work and catch something of the contagious research enthusiasm. Another influence which may be favorable to the spirit of scholarship in the undergraduate is contact with advanced students of serious character and definite purpose.

But there are influences of graduate work which are not so favorable in their effects upon undergraduate study. In the first place, the staff in the institution which combines graduate with undergraduate work is almost certain to be selected primarily because of its promise in the advancement of knowledge rather than because of its teaching ability. In a department which includes all those who give instruction in a given subject, either graduate or undergraduate, it is almost certain that the senior members will select graduate work and that the junior members will serve their term in the more elementary instruc-

tion. This may result in the teaching of undergraduates by gifted teachers with the enthusiasm of youth, but frequently the result is less happy. Students fresh from the technique of a Ph.D. thesis are set to the task of introducing young students to the field, although they may never have considered the teaching problem and although their interests may be in highly specialized work. The evils which Professor Richardson has pointed out in the type of college instruction that results from the extreme specialization of the usual teacher are likely to be felt in full force or even to be accentuated in the instruction which combines undergraduate and graduate work. In some institutions the instruction is to a considerable extent made to serve the research work, for graduate students are used in large numbers to serve as laboratory or classroom assistants.

Are these evils necessary or are they due to faults which may be corrected? They belong in part to the latter class. If chairmen of departments are selected who have an interest in the problems of the college as well as in those of research, it should be possible to see that elementary classes are taught by good teachers; and yet the difficulty of finding men who are at once brilliant investigators and good teachers for undergraduates is one that cannot be easily met. The plain fact is that there are not enough of such men to go around.

In so far as it is itself chiefly a professional school, leading to the vocation of teaching, the graduate school is liable to the same tendency to isolation and abstractness which to a greater or less degree characterizes preparation for any distinct vocation. The lawyer, the physician, the clergyman, has to recognize the dangers of professionalism; the student in graduate work, despite the favorable influence of research in preventing the professional attitude from hardening, nevertheless cannot entirely ignore the fact that teaching has certain perils of its own, which are so frequently set forth in literature that they need not be catalogued here.

#### NECESSARY CONDITIONS OF SUCCESSFUL GRADUATE WORK

The first requisite for both the purposes of graduate work is undoubtedly the presence of a staff. For the advancement of knowledge the primary qualifications of the staff are ability as investigators and, scarcely second to this, ability to inspire and direct the work of others. Great investigators frequently succeed in important work with meager equipment and under pressure of teaching or of financial stress which requires spending time on pot-boilers. But without the presence of an able and enthusiastic staff no research can be expected. It is

fortunate if the ability to pursue investigation and to direct the work of others can be combined in the same man. This, however, is not always possible.

Every great university probably includes a few men who are solitary workers, carrying on exploration in fields where few could follow, and lacking aptitude to draw others into their own problems. A limited number of such men who play a lone hand may contribute much to the advancement of knowledge and to the prestige of scholarship, especially if others in the department are available to take a larger measure of responsibility in guiding the work of others. A genius should be free to work in his own way, but for those who fall short of this classification it is reasonable to expect a fair measure of responsibility for the teaching function. While it is true that a very little contact with a great mind is often influential out of all proportion to the amount of such contact, it is to be remembered that this is chiefly significant for the highly gifted minds, who will probably make their way to the top in any case. For the work of grounding students in the fundamentals, for training in methods, for practice in analysis and interpretation, for insistence upon breadth of background,— for all these there is great need of patience, of thoroughness, of individual attention, if the best results in discovering investigators and preparing teachers are to be secured.

Assuming the staff, it should be obvious that those who are capable and ambitious should be given opportunity. This means reasonable freedom in respect to time. In many institutions pressure of undergraduate work leaves little free time for carrying on original investigation. There is undoubtedly a difference in men. Some will find time, by hook or by crook, to the exclusion of recreation and home from their program, and with some sort of compromise as to teaching duties. Others of perhaps equal ability permit themselves to be drafted for committee work or administrative duties within the department, and find little time left for research. Much may be done to aid research by a wise flexibility in the requirement and arrangement of the time set apart for teaching. The common practice is that of a uniform standard of hours per week for instruction. Under proper restrictions it may be a better arrangement to concentrate teaching in one part of the year and leave another period wholly or partly free for research. In the case of men who have shown distinct promise it should, if possible, be arranged to encourage them by an occasional period of free time to complete and publish important work. Such occasional periods of change of work from teaching to research have commended themselves more generally than the establishment of

research positions which call for no teaching. A reasonable amount of teaching is or may be helpful in the stimulation of research. An excessive amount may be fatal.

Adequate equipment in library and laboratory is another obvious necessity. Some of the most important discoveries have been made with simple apparatus, and there is undoubtedly a point at which the needs of research stop and the demands of architectural splendor begin. With a limited amount of funds to be spent it is difficult to hold a balance between these two desirable ends. For a university located in a great city, beauty and dignity are a part of the contribution of the university to the city; they represent the value of learning and education in the total civic life of the community; yet to expend extravagantly upon architecture to the point of deprivation of necessary facilities is certainly a wrong balance.

A very important encouragement for research is provision of funds to aid the publication of work too technical to be accepted by publishers upon a commercial basis. Scientific journals provide for the publication of much of this material, and in a few fields the government provides for publication; but it is increasingly difficult to secure the publication on a commercial basis of research which is appropriate for a volume rather than for a journal article, especially if the author is young and has not yet made a reputation. It is very discouraging to continuous productivity if there is little prospect of making known the results of years of hard work.

An important adjunct to the maintenance of high standards of graduate work is the presence of a sufficient number of graduate students to give mutual stimulation and criticism. There are, of course, exceptions in the case of occasional men in certain fields who may make up in other ways for the absence of this factor; but in subjects where analysis and discussion of subject matter is important, the presence of a group of fellow students is a powerful reinforcement to the guidance of the instructor. A student may at times find that he makes greater progress in independent work by the give and take of fellow workers of his own stage of development than by the less familiar contact of the instructor.

#### STANDARDS OF GRADUATE WORK

Standards of graduate work are naturally determined by a dual purpose: on the one hand, the advancement of knowledge; on the other, the preparation of teachers. Or, if we accept Dean Woodbridge's enumeration<sup>3</sup> and add to these two purposes a third, — namely,

<sup>3</sup> See page 350.



that of affording opportunity for further liberal study to the college graduate, irrespective of professional aim, — then we may give weight to this further purpose. Standards exist, first of all, as aids to make possible the purposes of graduate work; but they have a second function which often interferes with the first, namely, that of affording the basis for the granting of degrees, and thereby of giving official recognition to the completion of a certain amount and quality of work. These two purposes of standards are not always happily combined. Especially is it true that pressure upon members or prospective members of college faculties to provide themselves with Ph. D's results in lowering the quality of this degree as an indication of ability for research and interest in research. Presumptive proof of this statement is afforded in the considerable number of men who receive the doctorate yet never make a further contribution to their subject. Many may successfully plead lack of stimulus in the small institutions in which their lots are cast, or in the excessive teaching load which they are required to carry, but there is a considerable number of silent doctors who are not under such handicaps. The presumption is heavily in favor of the interpretation that many of these never had genuine ambition for research. They may be excellent teachers in their institutions, but it would be better if a distinction could be made between them and those who have the disposition for creative work. As yet, however, there is so strong an insistence upon the degree of Ph. D. as a qualification for teachers in colleges and universities that there seems little hope of restoring this exclusively to its primary purpose. The case would seem not to be beyond the ingenuity of such an organization as that of the Association of American Universities, but no plans of practicable solution have thus far been offered.

If a sufficiently high standard for the thesis is maintained, the questions of residence and credits, and of a reading use of foreign languages, are likely to care for themselves. Two years of graduate work is a theoretical minimum for candidacy for the doctor's degree, but unless the subject is one which the student has already pursued for some years in undergraduate work, the chances are that three or four years will be required for the ripeness of scholarship which is characteristic of a satisfactory thesis. Of course there is often a temptation on the part of both instructor and candidate to prolong unduly the work upon a thesis. It is usually better to publish a shorter thesis and then go on with another piece of work than to postpone completion of the thesis until a degree of perfection is reached that belongs naturally to a later stage of scholarship. The thesis should be a trial heat rather than a last race.

Standards for the master's degree are very generally set by the completion of one year of graduate work. This marks different degrees of proficiency in subject matter, according as the subject is or is not one that has been pursued in the undergraduate curriculum. Nevertheless, since the master's degree stands, on the whole, for a year of graduate work rather than for a set standard of proficiency in subject matter, there is no serious confusion of standards in the public mind.

As standards are determined in part by the purposes of instruction and in part by the public demand for certain degrees, they are also further determined by the conditions for membership in graduate work, by the program and type of this work, and by the extent to which graduate work is separated clearly from undergraduate works. The usual qualification for entrance into graduate work is the possession of the bachelor's degree. It has been objected that there is no necessary relation between the possession of a bachelor's degree and ability to make additions to knowledge. It is, however, a protection against the pressure of what might prove to be overwhelming numbers, and it probably does not dampen the courage of many first-class minds. For the other purpose of the graduate school, — namely, the preparation of teachers, — this standard has thus far seemed to accord best with the general system of education which has kept the bachelor's degree to represent a liberal, that is, nonprofessional, curriculum in the arts and sciences.

An important variant from this generally recognized standard of requiring a bachelor's degree for entrance upon graduate work is proposed in the plan announced by Johns Hopkins, which provides (1) for discontinuing the usual academic courses of the first two years, (2) for confining the university to advanced work in special fields, (3) for admission to advanced courses on the basis of graduation from a junior college or completion of two years at a standard college, and (4) for the omission of any bachelor's degree and the conferring of an M. A. or Ph. D. as the only degrees granted by the philosophical faculties. This affords an easy solution for many of the difficulties arising from the presence of undergraduate and graduate students within the same walls. Only the actual trial can determine how large a proportion of the student body would consist of those aiming exclusively at scientific or educational work, and whether there would be any considerable number of students not aiming at the teaching profession who nevertheless desire a bachelor's degree. Such an experiment is desirable. On the other hand, while the increasing numbers who are pressing into the colleges may make it necessary for state universities and endowed universities to eliminate the work of the first two years of

the present college course, it by no means follows that all such institutions can discharge their duty to the community by limiting their work to the professions. The bachelor's degree, with the work it represents, has been under severe criticism, but it represents an important feature of American life. It implies the desirability of the college course not merely for the professions but for those engaged in business and industry. It may be assumed, therefore, that for some time to come most universities will provide for the bachelor's degree, and will consequently treat this as the natural division between the type of work appropriate for general education and the type of work designed for the professional teacher and investigator.

The program of study in the graduate school should be flexible in its methods and requirements. A tendency is sometimes found to multiply courses under the pretext of covering the field. No field can be covered so completely that an ingenious mind cannot discover new reaches which ought to be explored and lectured upon. A few fundamental courses are doubtless necessary, but if right methods of work are attempted the student should be capable of going on by himself. Emphasis should be placed upon reasonable mastery of a subject rather than upon the mastery of contents of specific courses. It is important that the student give time enough to acquire this freedom and mastery of his subject; hence a minimum time requirement is justifiable. But to set any number of course units which must be completed is likely to suggest to the student that when he has completed a given number of units satisfactorily he has some claim to receive recognition by a doctor's degree, which is a fatal error.

The emphasis in methods of instruction, in the type of contact between instructors and students, in the tests provided, should assume that the students are anxious to learn if given a chance, and should be so animated by the free spirit of creative work that everything else should be kept in due subordination.

#### RELATION OF GRADUATE TO UNDERGRADUATE WORK

The question of separation between graduate work and that of undergraduates has as yet received no unanimous answer. The practice in most universities is to offer some courses for undergraduates only, some for graduates only, and some mixed courses to which both graduates and undergraduates are admitted. There can presumably be no question that freshmen and sophomores should not be admitted to graduate work. As regards juniors and seniors the case is less clear. On the one hand, it is maintained that juniors, and especially seniors,

who have had good preliminary courses are more keen and competent for advanced work in the field of their principal sequence than graduate students who come from institutions in which they have had no work or poor work in this field. It is maintained also that, owing to the present conditions of American life, the brighter minds are more likely to be attracted to business than to the teaching profession. Hence the senior class of undergraduates is likely to contain a considerable number of the brighter minds of the class, whereas the graduate students, who consist of those that are looking forward to teaching, are a group selected not wholly on the basis of superior ability. On the other hand, it may be urged that the decisive factor in the question of separate versus mixed classes should be the difference in purposes, since the graduate student is virtually a professional, the undergraduate a nonprofessional. Mixing the two may prevent the best work in either. It may further be maintained with reason that the presence of many mixed classes is due largely to the lag in the development of graduate work, as a result of which the undergraduate methods of instruction are carried over into so-called graduate courses.

This leads to the notice of an additional consideration in weighing the merits and disadvantages of mixed classes: the effect of the constituency of the class upon the method and content of the course. If a course is made up very largely of graduates, with a very few selected undergraduates, it may well be that no lowering of standard will result; but if a class is approximately half and half, or if there is a preponderance of undergraduates, it is almost inevitable that the instructor will be influenced by the students who make up the body of the class. Undergraduates will not normally take the same interest in specialized problems. This is not to deny the value of inspiring undergraduates with the creative spirit; when this can be done successfully, a large part of the difficulties of enlisting student interest will be on their way to solution; but so long as the pressure of undergraduate numbers continues to be what it is, protection for the best type of advanced work is most likely to be found by minimizing the number of mixed classes and thereby encouraging freedom, in the graduate work, from the requirements which necessarily obtain in the college.

A question that may take on importance in the near future is that of applying some standards of selection to candidates for admission to the graduate schools. At present the general practice is to admit those who have received the bachelor's degree from an institution of good standing. Staff and equipment in most graduate schools have not been put to capacity service by the numbers of graduate students in residence, and those who have presented themselves have pre-

sumably been those who desired to profit by the opportunities offered. Hence they have been welcomed. In the larger graduate schools a new problem is presenting itself. The numbers of those students in such subjects as mathematics, English, and history who present themselves as candidates for the master's degree are becoming so great as to involve a serious tax upon the time and energy of instructors. The best investigators and instructors are likely to feel this pressure most severely, because in their courses students find suggestions of problems to be worked out. They naturally wish to write their theses under the guidance of these instructors. This excessive demand upon the time and strength of instructors is certainly a problem. But it does not follow that the easiest solution for this problem, namely, that of restricting numbers of students, is an appropriate answer also for the larger problem of providing proper education for those who seek it and need it in the interest of our whole educational system.

The first problem, that of protecting the time and strength of the ablest instructors, is a problem for the universities to solve in part by greater flexibility in methods, in part by recognizing the guiding of research as equivalent to hours of classroom instruction, and in part by a better distribution of responsibility for directing graduate work. The second problem is one which must somehow be answered. If additional endowments or additional taxes are necessary, these alternatives must be frankly faced. It is believed by those who advocate restriction in admission that at present some students are found in the graduate schools who have mediocre ability and who lack ambition and definite purpose. It is held that to exclude such would make possible an improvement in the quality of graduate work and would relieve instructors of a useless burden. It is quite possible that there is a measure of truth in this assertion, but there is also a possibility that our schools would exclude a considerable number who ought to receive advanced instruction.

#### FELLOWSHIPS AND SCHOLARSHIPS IN THE GRADUATE SCHOOLS

Are fellowships and scholarships in the graduate schools a benefit or an injury to the twofold purpose of these schools? The question is not easy to answer. The purpose of fellowships and scholarships is to enable gifted students who would otherwise be unable to pursue graduate work to undertake this with some degree of freedom from the necessity of earning their way while at study or of postponing study for a period. Why should this be necessary in the graduate

schools and not in the professional schools of law and medicine? Obviously because the financial returns in these two professions are sufficiently great to justify a student in borrowing money with which to complete his professional training, whereas the profession of teaching offers little future security of this kind. In certain lines of industrial research work, as, for example, in oil geology, there may be attractive possibilities; but in general the condition is as stated. A further no less important fact is that, almost without exception, students who decide to enter upon research or upon the profession of teaching come from families that are not well-to-do. In our American society the sons and daughters of the well-to-do may select law, but are most likely to look forward to a business career, since teaching involves a lowering of the standard of living for those who come from well-to-do families. As a matter of fact, practically all holders of the doctor's degree have received appointments as scholars or fellows. If we judge on the basis of present practice, there would seem to be a strong presumption in favor of the use of fellowships and scholarships to aid research and to recruit the teaching profession.

Yet there are arguments on the other side which almost if not quite convince administrative officers that fellowships and scholarships are of doubtful value. The radical difficulty of insufficient pay to the profession is not met by inducing more candidates to enter the profession. And if we waive the difficulty of adequate salaries for the teacher as a problem too large for discussion under the head of the graduate school, there yet remains one feature of the situation which should be considered here, namely, the use of fellowships and scholarships to attract students to institutions or departments of work whose staff or facilities are clearly not up to a satisfactory standard. When fellowships and scholarships are offered to the right type of students and by schools with the right type of staff and facilities, there is, for the present at least, a justification for their continuance.

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## CHAPTER XII

### UNIVERSITY EXTENSION

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#### INTRODUCTION

1. *What is university extension?* Speaking generally, university extension is a phase or section of the much larger movement for adult education which was so noteworthy a product of the social forces released during the first two decades of the twentieth century. Adult education is defined by Frederick Keppel as "the process of learning, on the initiative of the individual, seriously and consecutively undertaken as a supplement to some primary occupation."<sup>1</sup> We have here, then, an organized program whose goal is the enlistment of all mature people in a campaign of education continuing throughout the duration of life. Study, learning, the development of intellectual capacity, the enrichment of the mental and spiritual resources, the growth of the latent powers of personality, should not cease with the passing of school or college days. These should be a regular part of the normal activities of life, to continue as long as life itself.

The general program of adult education is carried on by multifarious agencies. To name only a few of them, we have the Y.M.C.A. and the Y.W.C.A., the Knights of Columbus, the numerous commercial correspondence schools, the various types of people's institutes, the library extension organizations, reading clubs, women's clubs, the Chautauqua system, popular-lecture courses, and university extension. These all have the same aim, to make education an unending adventure of the human spirit,—coterminous with life itself. The goal is not only the immediate one of self-improvement but also the ultimate one of the progressive amelioration of human society.<sup>2</sup>

Mr. Keppel, in the article already referred to, is authority for the statement that "today there are at least five times as many adults,

<sup>1</sup> *Yale Review*, April, 1926.

<sup>2</sup> For a full discussion of the aims and ideals of adult education, see Edward C. Lindeman, *The Meaning of Adult Education*. New Republic, Inc., 1926.

men and women, pursuing some form of educational study as are registered as candidates for degrees in all the colleges and universities in the country." He estimates their numbers as follows :

In the 350 commercial correspondence schools of the United States about 1,500,000 new students register every year.

In public evening schools, part-time schools, and continuation schools, more than 1,000,000.

In university extension classes and correspondence courses, 150,000 students.

In Y. M. C. A. courses, 100,000 ; in courses given by other nonacademic organizations, 100,000 ; in workers' education classes, 30,000.

These figures take no account of agricultural institutes, art and natural-history museums, Chautauquas and lyceums, public-library reading courses, and instruction through the film, the radio, the magazines, and newspapers.

What part does university extension play in this general program ? It begins with that large group between the ages of eighteen and twenty who have severed their connection with formal schooling, and it includes those of any subsequent age who, lacking school connections, are nevertheless and for a variety of reasons moved by the passion for learning. University extension may be defined as the organized and systematic effort to make the resources of college and university faculties, libraries, laboratories, buildings, equipment, and other facilities available for educational service to those individuals and groups in the general population who, for a variety of reasons, are unable to matriculate as regular students but must pursue higher education "as a supplement to some primary occupation." It deals primarily with employed people, who must compress their educational activities within the limits of their spare or leisure time. It meets them, however, with a college or university program keyed to the intellectual pitch of higher education. Herein chiefly is it to be differentiated from most of the other agencies of adult education. It offers a program of university material to people capable of profiting by such material, but at times and places suited to those whose working hours are absorbed in the stern business of making a living.

University extension itself has two main divisions, which differ from each other in materials, in programs, and in objectives. These two branches of the general movement are usually distinguished as Agricultural Extension and General University Extension. This chapter is devoted to the latter of the two divisions.

Of agricultural extension it may suffice at this point to state that its purpose is to diffuse among the people, through coöperation between the United States Department of Agriculture and the land-grant



colleges, useful information on the subjects relating to agriculture and home economics, and to encourage the practical application of this information. This is accomplished through demonstrations, exhibits, the operation of model farms, farmers' institutes, the services of county farm agents, the organization of clubs of farm boys and girls, and the circulation of informative printed matter couched in plain and untechnical language. The work is supported by Federal money matched, dollar for dollar, by state money. This form of extension is found only in land-grant colleges or in state universities which include land-grant colleges.<sup>3</sup>

General university extension, on the other hand, deals with the diffusion of all branches of knowledge and learning dealt with in the college and university curriculum, with the sole exception of subjects embraced under the heads of agriculture and home economics. Its purview, therefore, is more strictly the academic and professional branches of the university program and the facilities and expert service pertaining thereto.

Because these two kinds of extension service have different objectives and different methods the administration of the two types is usually intrusted to two different departments within the university organization.

2. *Formal versus informal education.* As a side light on the causes which brought university extension into operation it may be observed that there now exist simultaneously in society two processes of education, one conventional and regular and the other informal and irregular. Under the former a child enters the kindergarten and then progresses by regular and more or less equal steps through the primary and elementary grades, the high school, the college, and the university or the professional school. This is the system that society has provided for those favored ones who are regular and who fit into the uniform program. But society has not been equally thoughtful for those who, through economic pressure, family responsibilities, ill health, and other causes, have not been able to maintain themselves in the lock step described above. For the most part these have had to shift for themselves, and it is a matter of social significance to recall, in the light of history, that many of those who have thus been forced out of the formal educational system have been found later to be among the intellectually gifted. In other words, the adverse selection has been based not on mental capacity but on the vagaries of the social and economic order.

<sup>3</sup> For further information on the origin and operation of agricultural extension see the annual reports and other bulletins of the United States Department of Agriculture. See also R. R. Price, *The Financial Support of State Universities*, chap. viii. Harvard University Press, 1924.

Hence, in order to offset these inequalities of opportunity, there has arisen, parallel with the conventional system of education, a loosely organized, uncoordinated régime of educational offerings, aimed to supply the deficiencies of those who must of necessity pursue their studies at irregular intervals and at unconventional times. It is a guerrilla band compared with the serried ranks of the regular educational forces. Such individuals formerly picked up crumbs from the educational table through private reading, attendance on lectures, or other means dependent upon personal initiative. A generation ago students of law and medicine "read" these subjects in the office of a practitioner and under his guidance and supervision. Now organizations such as were listed in an earlier paragraph have been formed for the express purpose of rendering systematic educational service to those outside the regular ranks. The chief aim has been to offer instruction in the evening hours and at places readily accessible to the prospective students. Moreover, ability to profit by the offerings has been emphasized above conformity to regulations or adherence to prescribed methods of approach. Not the least important of the organizations formed for this purpose is that embraced under the general title of university extension.<sup>4</sup>

The modern university is not only a teaching institution but also a storehouse of miscellaneous information, authentic and up-to-date, and a center of research and investigation. In other words, the university conserves knowledge, increases knowledge, and diffuses knowledge. But much of the stored-up knowledge and its periodic increments, although of great interest and importance to society at large, is not in form to be readily assimilated by the busy people who could make practical use of it. Therefore it must, in many cases, be culled from scientific journals and the publications of learned societies, translated from technical language and abstract phraseology into the vernacular, and circulated widely among the people in attractive and readable form. This office of intermediary between scholars and the public is also a function of university extension.<sup>5</sup>

Wherever men and women labor in the heat or toil in the shadows, in field or forest, or mill or shop or mine, in legislative halls or executive offices, in society or in the home, at any task requiring an exact knowledge of facts, principles, or laws, there the modern university sees both its duty and its opportunity.<sup>6</sup>

<sup>4</sup> See J. B. Johnston, Higher Education at the Dinner Table. *University of Minnesota Bulletin*, Vol. 27, No. 38, July 26, 1924.

<sup>5</sup> For a fuller discussion of this topic see James Harvey Robinson, *The Humanizing of Knowledge*. Doubleday, Doran & Company, Inc., 1923.

<sup>6</sup> P. P. Claxton, in an article by L. E. Reber in *United States Bureau of Education Bulletin No. 19*, 1914, p. 4.

3. *The origin of university extension.* In a sense university extension was being practiced when Socrates talked with groups of young men wherever he found them on the streets or in the market place of Athens, or when Plato and Aristotle lectured to their disciples in the groves or on the porches. The beginnings of the organized movement, however, must be ascribed to England in the middle of the nineteenth century. It seems to have been one phase of the general humanitarian movement which came into prominence about that time. The work began in response to public demand, first on the part of school teachers and workingmen, and was almost wholly confined at the beginning to the field of physical science.

In England as early as 1850 a Mr. William Sewell, in a pamphlet urging the extension of university teaching, queried: "Though it may be impossible to bring the masses requiring education to the university, may it not be possible to carry the university to them?" Mr. Sewell's plans were not carried out, nor were those which were set forth five years later by Lord Arthur Hervey. The latter, however, resulted in the introduction of local examinations for adults, and these led subsequently to the arrangement of courses of lectures under the supervision of the universities.

Popular lectures in series were begun by Professor James Stuart, lecturer in Cambridge University, during the year 1867. To him also may be ascribed the introduction of the printed syllabus and examinations. The first lectures were before women teachers, but they were later extended to railway workingmen. These lectures gradually evolved into class instruction. In 1873 Cambridge University adopted the extension system as a permanent policy, and it was followed in 1878 by Oxford. Meantime, in 1876, the London University Extension Society was founded, and thereafter the system gradually spread all over England. Since 1903 instruction has been carried on in two forms: the university tutorial class system, under which a student pledges himself to study some fundamental subject in the same class and under the same instructor for three years; the so-called university-extension class, a less intensive system, under which the students attend weekly lectures and then remain for an hour of discussion, conference, and quizzing.

In the United States some features of university extension may be traced back to the American National Lyceum founded in 1831. The movement for popular education was given additional impetus in 1874 by the establishment of the Chautauqua, with its literary and scientific circle. Correspondence study was also a prominent feature of the program.

The English system was initiated in this country by the American Library Association in 1887. Actual extension work was begun under the auspices of public libraries in Buffalo, Chicago, and St. Louis. By 1889 a university, Columbia, had joined the movement and was announcing extension classes for teachers in New York and in neighboring towns.

The most significant date, however, in connection with the American extension movement is 1890, when the American Society for the Extension of University Teaching was organized in Philadelphia. Although this organization was supported from private sources, it grew rapidly. Within six months after the first center was organized twenty-three centers were in operation. The following year a similar society was organized in Chicago; but it was short-lived, since The University of Chicago preëmpted the field in 1892. Meanwhile, in 1891, New York made the first state appropriation for university extension, — \$10,000. The money was to be expended on the organization and supervision of study clubs, exchanges, traveling libraries, public libraries, and library schools, but not on extension lectures.

When The University of Chicago came to be founded, in 1892, it included extension teaching in its university policy, and, as a matter of fact, promoted it as one of its major activities. This form of educational service has been carried on consistently by that institution ever since.

The first flush of enthusiasm for the new movement was followed by some fifteen years of quiescence or retrogression. When the first national congress on university extension met in Philadelphia toward the end of 1891, it was reported there that between 1887 and 1891 twenty-eight states and territories had inaugurated extension work; yet between 1891 and 1906 most of the activity in this line had ceased. It is probable that many of these efforts were in the experimental stage and were undertaken without adequate financial provision and without thorough knowledge of the conditions or understanding of the real meaning of the movement. The universities also contributed to the unfavorable issue by the inflexibility of their organization and by their unwillingness to adapt their methods and standards to the needs and previous training of these adult students.

The year 1906 began a period of revival, reorganization, and the establishment of extension departments in additional institutions. Between the above date and 1913 twenty-eight educational institutions organized extension work, usually in separate departments. By 1926 these numbered more than forty of university grade, a large majority being state universities. These figures take no account of

the large number of teachers' colleges, normal schools, and small endowed or denominational colleges, which now engage in some form of extension work. Since 1913 legislative recognition and support of this type of work have been, with slight exceptions, unailing. Moreover, the state universities have come to regard this form of activity not only as an opportunity but also as an obligation.

From the foregoing sketch it will be noted that university extension began, not as a spontaneous movement on the initiative of the universities and sponsored by them, but as a response to public demand. University men were concerned, but the pressure came upon the institutions from outside. The class system developed from the original lecture series supplemented by syllabi, questions, and examinations. As adjuncts came bulletins, study clubs, exchanges, and traveling libraries.<sup>7</sup>

### THE OBJECTIVES OF UNIVERSITY EXTENSION

As a part of the general movement in the interest of adult education, university extension has, speaking broadly, the same objectives as higher education itself. University extension consists of higher education brought to a group more mature, on the average, than the corresponding matriculated students in residence at a university, and at somewhat irregular or unconventional times and places. These general objectives may be inferred from the two following statements, the first dealing with adult education as a whole and the second confined to that distinctive portion known as university extension :

Orthodox education may be a preparation for life, but adult education is an agitating instrumentality for changing life. . . . Adult education will become an agency of progress if its short-time goal of self-improvement can be made compatible with a long-time, experimental, but resolute policy of changing the social order.<sup>8</sup>

Adult education through university extension seeks to provide adults of any age, who have not pursued all or part of a university curriculum, or who, having had a part, desire to continue such a curriculum into more advanced subjects, opportunity for intellectual improvement at such time and place as approximate the adults' convenience, such opportunity being dependent on the university's type of instructor and his organization of the subject, the latter differing but little, if at all, from that required of intramural students.<sup>9</sup>

<sup>7</sup> For a survey of the development of university extension see L. E. Reber, University Extension in the United States. *United States Bureau of Education Bulletin No. 19*, 1914; also A. L. Hall-Quest, *The University Afield*. The Macmillan Company, 1926.

<sup>8</sup> Edward C. Lindeman, *op. cit.*

<sup>9</sup> A. L. Hall-Quest, *op. cit.*

In general the objectives are both vocational and cultural. The goal is to stimulate the student's self-motivating powers, to the end that he shall rise to his potential level, develop his latent capacities, and round out the full resources of his personality. This is economy of human resources, to train a man to play the part he is best fitted to play and to fill the niche in the social fabric that he can best fill. It means the final elimination of the faulty social engineering inherent in the practice of fitting the square peg in the round hole. The more specific aims and purposes of university extension, especially as related to its teaching functions, may be summarized as follows:

1. *University service for nonmatriculants.* A university, and more particularly a state university, has an obligation to disseminate learning and to carry the cultural heritage of the race to the whole of its constituency. This means, among other things, making university instruction available to nonmatriculated students. It implies also making higher education a vital force in the lives of those who are unable to participate in the regular university campus program. In furtherance of this aim university extension makes possible the use, by outsiders, of materials, facilities, or equipment not usually available except for resident students, if such use can be shown to be educationally profitable. It also brings about contacts between faculty individuals or groups and outside representatives of science, art, industry, and the professions, to the reciprocal profit of both parties. Not infrequently it brings the material equipment and facilities of the university and the expert knowledge and technical skill of its staff to bear directly upon the specific problems of the commonwealth. The direct contact between university teachers and officers and living, working humanity outside the academic walls tends to make more real and vital the connection between school and society.

2. *University opportunity for employed people.* People engaged in making a living are usually, by the very engrossing nature of that pursuit, debarred from participation in the regular or conventional offerings of higher education, and that without regard to their aptitudes, capacities, or tastes. Because of economic pressure they may not abandon their jobs for the pursuit of education, and the regular university program operates during the working day when their energies are already engaged. To such as these, often avid for the intellectual life or for vocational training, the extension program of evening classes and correspondence courses comes as a boon. Training, information, and guidance in vocational subjects on the higher levels is given to those engaged in trades, industries, commerce, and professions. This enables individuals with the requisite native capac-

ity to combine making a living with obtaining an education, often to the reciprocal advantage of both pursuits; and the so-called cultural subjects are by no means excluded from the advantages of this combination.

3. *Provision for irregular students.* The colleges and universities in general set forth certain academic prerequisites for entrance to their privileges, — for example, graduation from a high school; but there is need of some provision for satisfying the intellectual aspirations of those mature persons who are deficient in educational preparation. They have the brains, and in addition seriousness of purpose developed by maturity and experience. Again, there are persons of adequate mental ability who wish to study, under competent guidance, subjects in which they are particularly interested, without being forced to embrace an entire curriculum. These people obtain, under the system of university extension, the privilege of taking, if they choose, one course or subject at a time. The opportunity for study and instruction is made flexible, to the end that the work may be done at such times, at such rates, and under such conditions as may be necessary or most convenient for the given student. Such a system is useful also to the impecunious college student who must drop out from time to time to recoup his financial resources. During his absence in gainful occupation he may, through evening classes or correspondence instruction, keep up some of his academic courses.

4. *Stimulation for continuing education.* The central gospel of university extension is conveyed in the doctrine that education, and particularly higher education, should be a continuing process functioning throughout life. Hence, the individual, whatever his age or social status, should always be engaged in some form of organized study. To furnish adequate and generous opportunity for this constant individual development is the high duty and privilege of the university. Thereby will come to many, whose formal schooling is over, richness of life and enlargement of the intellectual and spiritual resources. This task of the university carries with it the duty of disseminating as widely as possible the accepted and verified results of the investigations of scholars and discoverers, and of inculcating among nonacademic people habits of thinking based on facts and verifiable data. To accomplish this result there must be made available to the general public, in popular and nontechnical language and with suitable interpretation, the latest authoritative findings of scientists, economists, sociologists, psychologists, philosophers, and critics of contemporary life. This should eventually result, among people generally, in a more intelligent and discriminating attitude toward the

tenets, findings, principles, or standards of present-day science, art, literature, history, and philosophy. Nor should the fact be overlooked that by this function of university extension social values are conserved through the facilities afforded individuals to specialize in some single phase of intellectual life or in one of its cultural aspects,—for example, the drama, literature, philosophy, and science, whether for diversion, as an avocation, or merely for mental relaxation and enjoyment. This same opportunity is also extended to those who would supplement and bring up to date their already acquired knowledge or technique in some particular vocational field, such as medicine, dentistry, flour-manufacturing, road-building, radio or telephone engineering, or chemistry. Thus the practitioners of any particular vocation, profession, or specialized field may keep themselves perpetually abreast of the latest developments in theory or practice in that field. This is tantamount to extramural postgraduate instruction. The agency through which the university accomplishes these things is university extension.

5. *Extension of university leadership.* It goes without saying that university extension is vested ex officio with a mission to furnish authoritative leadership in helping to set the pace and to determine the trends and content of popular, extramural, adult education. But its province and function extend more widely than that. It has also the high privilege and opportunity of discovering, fostering, and stimulating among nonuniversity people latent capacities, powers, skills, or aptitudes, through the development of which these individuals may rise to their optimum levels. Involved in this function is that of inspiring talented students to a desire to prepare for and assume leadership, and then, so far as possible, supplying opportunity for the assumption and exercise of that leadership. Finally, and by no means least important, university extension is one of the means through which the university itself extends its leadership, guidance, intellectual standards, social ideals, and pervasive influence far and wide to the geographical limits of the constituency which it serves.

#### ENTRANCE REQUIREMENTS FOR EXTENSION WORK

It is clear that university extension appeals to two classes of people: those who, in an irregular way and at a slow pace, are accumulating credits and satisfying requirements looking toward the attainment of one of the university degrees, and those who are satisfied to seek merely the content value of the instruction, whether for vocational or cultural ends. To the former group the regular college-entrance



requirements are applicable and valid. The second class, however, deserve and receive more liberal treatment in this respect. It is customary to require of these students only a certain maturity, a definite purpose, ambition, and the mental ability to do the work. The latter is demonstrated by doing it. Only those persons who are actuated by strong motivation and who are conscious of the possession of adequate intellectual powers will undergo for any length of time the self-imposed but arduous discipline involved in earning a living while at the same time pursuing university studies. An inexorable natural selection weeds out the incompetent, the slothful, and the faint-hearted.

For certain specialized courses, such as those for embalmers, for doctors, or for dentists, certain specific entrance requirements are regularly imposed. These are usually necessary because of the standards adopted by the particular profession or because of certain state laws and regulations. For instance, the requirement may be one concerning age or it may have to do with the possession of a license. At any rate, it results in bringing together a more or less homogeneous group.

#### THE ORGANIZATION OF FORMAL INSTRUCTION

1. *University-extension classes.* Extension classes are organized and offered to extramural students for the purpose of bringing to them, at convenient hours and places, the equivalent of the courses found in the several university curricula. These classes appeal to business men and women, teachers, club women, housewives, mechanics and artisans, college graduates desiring to continue their studies, college students endeavoring to make up deficiencies, and all others who are interested in vocational efficiency or cultural development. The extension-class system, for obvious reasons, is most successful in universities located in large centers of population.

The adult attending these classes usually has in mind one or more of three possible objects to be attained. He desires (1) to acquire vocational or professional skill, training, or proficiency leading to economic improvement or to professional advancement or to betterment of social and vocational status; (2) to satisfy sublimated curiosity, a craving to know, an interest in things in general, an acquaintance with the world in which he lives; (3) to gratify an aspiration for enlargement of life, for enhancement of the joy and vigor of living, for the spiritual exaltation and satisfaction which comes with the expansion of powers.

*a. The curriculum.* In most extension divisions three types of subjects are offered under the class system. The first embraces those

branches which are commonly found in the curriculum of the college of liberal arts. These are called the collegiate or academic courses. Included in this group are the social, biological, and physical sciences, languages, mathematics, philosophy, and English. In the second group fall those subjects which are generally included within the curriculum of university schools of business. Among these branches are economics, the several divisions of accountancy, public and private finance, marketing and merchandising, business law, transportation, and the secretarial studies. The third group embraces the engineering and industrial subjects. In this division may be found courses in drafting, surveying, engineering mathematics, architecture, and the several branches falling under the respective heads of electrical, mechanical, and civil engineering.

Outside of these classifications may be found the special courses for teachers, embracing subjects in the history, technique, organization, and administration of education. Additional also are certain specialized courses, such as those in the fine arts, textiles, interior decoration, dressmaking and millinery, journalism, public health, nature study, and appreciation of music.

The general rule is to offer through extension only what is found in the general program of the university, especially if credit toward a degree is involved. Yet there are numerous exceptions to this rule. Almost any subject may be offered and taught, provided it can be handled on the university level by a well-qualified instructor and there is sufficient public demand.<sup>10</sup>

*b. The faculty.* Extension teachers are regularly required to have the same qualifications as their colleagues of the intramural faculty. The ordinary practice is to engage members of the regular university teaching staff for extension teaching on the basis of additional compensation. Whenever the amount of work justifies it, the practice is followed of adding a full-time instructor to the extension staff. He then devotes his whole time to extension teaching, either with classes or by correspondence. Occasionally also a university department will join with the extension division in employing a man, each taking half of his time. The employment of full-time extension instructors has probably gone farther in the University of Wisconsin than elsewhere, although numerous examples may be found in the Universities of Indiana, Minnesota, and California. Columbia University, The University of Chicago, and the University of Michigan tend to

<sup>10</sup> Representative programs of extension-class offerings may be obtained from the extension divisions of several universities, notably Columbia University and the state universities of Indiana, Wisconsin, Minnesota, and California.

the practice of employing for extension teaching only members of regular departmental staffs.

A variation of the procedure outlined above is found in the employment of specialists in different lines, enlisted from business or professional life. The advantage of this is that men of eminence or authority or special attainments and experience may thus be obtained, who are willing to undertake a small amount of teaching as an avocation but are not willing to make it their business. Extension teaching appeals to a man of this type because the work comes at a time when it does not interfere with his regular vocation and because he may, if he chooses, limit himself to one class only. The custom is to have these men appointed as regular members of the faculty *ad hoc* and for short terms. In the same way the university may appoint teachers from other educational institutions to conduct extension classes in their own towns or in neighboring centers, thus saving traveling expenses to distant points.

The practice of employing regular members of the university faculty to teach late-afternoon or evening extension classes has raised an interesting question of policy. Theoretically at least, a man is paid his salary as a member of the faculty for his full time, which includes not only his normal load of classroom teaching but also committee assignments, conferences with students, administrative duties, research, and scholarly production. To what extent, then, is it legitimate to pay him extra for university teaching at an unusual time of day? It is well known that university professors are often employed by commercial firms as consultants or in some expert capacity and paid for their services, but that money does not come out of the university treasury and no question of duplicated pay is involved. The question has not yet become acute, but it has been raised and with the growth of university extension will undoubtedly press for solution. The employment of full-time extension teachers does away with this issue.

Full-time extension teachers are usually paid on the same basis as other members of the faculty. When departmental men are engaged, they are paid by the class. The basis of compensation varies widely with different institutions. In some cases a definite scale is established, graded from a minimum to a maximum, the several steps being correlated with the experience of the instructor or the stage of advancement of the course. Elsewhere the instructor gets a percentage of the fees paid by the class. A third method is to pay per class or per hour a fixed fraction of the instructor's regular annual salary. This is the method pursued by the University of California. The

University of the City of New York pays its evening-class instructors per hour one one-thousandth of their respective annual salaries. Some institutions use combinations of the methods described above in arriving at a basis of compensation. In general it may be stated that the stipend for a class meeting once a week for a semester of seventeen or eighteen weeks ranges from \$150 to \$300.

Full-time extension teachers are usually considered as members of the departments which they represent, but assigned to special duty with the extension division. They are therefore responsible to the head of the extension division for their programs and routine duties, but responsible to the head of the university department for the content and sequence of their courses and for the maintenance of standards. It is customary to make appointments to the extension staff on the initiative of the director of extension, but only with the approval of the head of the university department concerned. The scholastic standing of the incumbent is thus assured. The university faculty or the faculty of a school or college will sometimes impose limitations on the amount of extension teaching which one of its members may undertake in addition to his regular duties.

*c. Methods, practices, procedures, standards.* Extension classes, because they are organized primarily for the benefit of employed people, are usually held in the late afternoon and evening. The evening hours are preferred, as a large majority of the students cannot leave their work and reach the classroom before six o'clock or half an hour later. Public-school teachers occasionally ask for classes at four o'clock or even on Saturday morning.

Registration is made and fees are paid by the single course or subject. This makes for flexibility and enables each student to make an individual adaptation of the program to his own circumstances. If he can find time, money, and strength for only one course, he subscribes for only one. If he wants to attend classes three or four nights a week, he may do so. He may also pick and choose the subjects he is interested in from time to time, and is not required to elect an entire curriculum. He is encouraged, however, to pursue sequential courses.

The teaching methods are adapted to the age and experience of mature students. Frequently the instructor, with insight and sagacity, finds it wise and expedient to abandon the lecture method in favor of the method of free discussion. Theoretical knowledge on the part of the teacher is met by practical knowledge on the part of the student. Dogmatic utterances and ex cathedra pronouncements on the part of an instructor, however weighty his reputation in academic circles, are always resented and sometimes challenged by extension students.

So also with sarcasm or flippancy. These men and women are serious and they mean business. They demand and deserve the best that a teacher can give. An extension class is often in an interesting way a touchstone of real teaching ability. A university professor, thoroughly a master of his subject, may bore his class of college students almost to extinction through an entire term. They suffer dumbly but must perforce attend. Not so with an extension class; when he begins to bore them, they cease to come. As Lindeman well puts it: "Adult learners attend classes voluntarily, and they leave whenever the teaching falls below the standard of interest."

The greatest holding power of extension classes is found in the fact that they meet at times and places most convenient for the students. The time element has already been discussed. By beginning about 6:15 it is possible for the student to attend two classes each evening. As to places, university-extension classes are regularly held in factories, banks, public libraries, public schools, court rooms, and store-rooms. The aim is always to take the teacher to the class rather than to bring the class to the teacher. Of course, many of them are held in the university buildings on the campus. Classes in certain technical subjects requiring laboratories or special equipment must necessarily be held on the campus. Other things being equal, classes are held in the university buildings at night so as to bring the students into the atmosphere of the institution itself. As an indication of present tendencies it may be pointed out that several universities have procured buildings for educational purposes in the heart of the business district. This is largely for the convenience of evening students. The University of Chicago has a down-town college; the University of Wisconsin has just erected a classroom building for extension purposes in Milwaukee; the University of California, in Los Angeles and in other large centers, rents classroom space in business buildings for the benefit of its extension students.

The normal practice is for each extension class to meet but once a week, each session lasting two class hours. The semester is usually seventeen or eighteen weeks long. This means that each such class carries with it a credit basis of two semester hours. In institutions which divide the year into terms or quarters two semester credit hours are evaluated as three term or quarter hours.

Usually the ordinary university textbooks are used for extension classes, but occasionally there is a substitution of a text in which the material is given a more popular or less technical treatment, or in which fewer demands are made for preparatory training. When the university library is not readily accessible to extramural students for

supplementary reading, additional texts are required to make up the deficiency. Frequently the printed texts are supplemented by mimeographed outlines, syllabi, or epitomes of library material. A movement is now on foot to establish small loan libraries or collections of books for rent in connection with particular courses. The other necessary facilities, such as drafting rooms, laboratories, and shops, are regularly made available to extension students on the same terms as to others.

There is gradually evolving a technique of teaching adult students, in which ordinary methods are slightly modified. The fact must be faced that these students come to class after a day's work, with tired bodies and tired minds. The work must be made, above all other considerations, interesting and stimulating. The endeavor is also made to correlate the class exercise with the experience and the background of the students. After all, this is in essence only the application of the principles of good teaching. Against the disadvantage set forth above may be offset the fact that these students are strongly motivated. They are taking the work, not because they were sent by their parents, not for reasons of social prestige or because it is "the thing" to go to college, but because they want it and need it. Hence arise noticeable earnestness and diligence.

*d. Credits.* Standards and subject matter for class work involving university credits toward a degree are determined by conference with heads of university departments. Students who present secondary-school credentials covering the generally accepted entrance requirements are permitted to count credits earned in extension classes toward the regular college degree. As yet few universities will accept extension credits for anything beyond the bachelor's degree, though some steps are being taken in that direction. The University of Wisconsin and the University of Colorado, under certain restrictions and limitations, grant graduate credit for extension work. Most universities also, among the requirements for a degree, have provisos as to time spent "in residence." This phrase is interpreted to mean "as a regular daytime student on the university campus." The normal requirements as to grouping, the earning of honor points, and the election of major and minor courses are also enforced in the case of extension students. Harvard University has avoided the difficulty about residence by establishing a special degree for extension students called A.A. (Associate in Arts). At the University of Minnesota extension-class students in the cities of Minneapolis, St. Paul, and Duluth are considered to be "in residence."

Parallel with the system of credits toward a degree is also a system of "extension credits" or "credit equivalents." These are granted

to those students who have done the work of a given course successfully even though they may lack the qualifications for admittance to the university. Such persons frequently do the work in credit courses while seated with other students who are doing the same work for credit toward a degree. Extension credits are recorded on the books of the registrar, but no effort is made to enforce group requirements or the pursuit of sequential courses. The latter desirable practice is frequently brought about by another device. Extension certificates are granted to students who complete certain special curricula of closely related courses. For example, Washington University of St. Louis grants an extension certificate in accountancy and one at the end of a two-year course in secretarial training. The University of Minnesota grants certificates in accountancy, in general business, in finance, and in the several divisions of engineering and architecture. These may be earned by the accumulation of thirty semester credits in prescribed sequential courses. This is the equivalent of one year's full-time work in residence. Extension students usually take from two to four years to accumulate this number of credits. The next step will probably be the granting of a special certificate for the completion of junior-college work, that is, the earning of sixty semester-hour credits in prescribed collegiate or academic courses.

*e. Fees.* A certain amount of uniformity and standardization is apparent in the fee system for extension classes as established by universities in various parts of the United States. In the first place, the fees, instead of being charged on the basis of a full, or normal, program for a given unit of the year, such as a term, quarter, or semester, are levied on the "per class" basis. In other words, university extension serves its offerings à la carte, while the university itself serves them table d'hôte. The extension student enrolls separately for each course which he wishes to pursue, and pays for it as a unit. Sometimes a slight reduction in the unit fee is made for a combined program of three or more courses. The generally uniform tuition fee charged is \$5 per semester credit hour. This is two or three times as much per unit as is charged the regular daytime student. This differential, however, is being somewhat reduced through the present tendency of universities to make considerable increases in their day-tuition charges. The relatively higher charges exacted from extension students are defended on the grounds, first, that it is more expensive to furnish the service at the irregular hours and to the smaller groups, and, second, that extension students can afford to pay more for instruction at their convenience, since they may at the same time hold lucrative positions.

*f. Relations with organized labor.* In many centers of the United States organized labor has established labor colleges for the benefit of its adherents. These institutions have emphasized courses in economics and kindred subjects, with special reference to the history of trade unionism and the problems of labor. Efforts have been made to devise schemes of coöperation between university extension and the labor unions, so that the latter might have the benefit of the facilities and services which are already available to the general public. Up to the present time these efforts have been largely abortive, for two reasons: first, the labor unions have been suspicious of or antagonistic to instruction emanating from the universities, on the alleged ground that these institutions are controlled by the interests of capital and that the teaching would therefore be tainted with capitalism; second, the American Federation of Labor had adopted a policy of not coöperating with the universities unless the classes were managed and administered by a joint committee composed of representatives of labor and of the university, with the former in the majority. The universities, especially the state institutions, supported by public taxation and consequently with a responsibility to the whole public, have not usually been willing to agree to this arrangement. They have felt that they could not properly surrender or share the control of their own classes; nor could they undertake to teach any university subject from the point of view of one element in their whole constituency. It should be recorded, however, that successful experiments in this form of coöperation have been made by Syracuse University, and in its summer term by Bryn Mawr College. The extension division of the University of California also has had notable success in working out this coöperative plan of labor education on the terms set by the American Federation of Labor.<sup>11</sup>

*2. Correspondence instruction.* Formally organized teaching by correspondence, or instruction by mail, was first exploited by commercial institutions on a large scale. During the past thirty years one such privately owned school has enrolled nearly three million students. During one year it sent out more than a million lesson assignments. Later this form of teaching was incorporated into the extension programs of the universities. In spite of much initial skepticism about the value of correspondence courses this form of educational activity has

<sup>11</sup> For further information as to fees, credits, the exchange of extension credits among institutions, and the pay of instructors, see the Report of the Committee on Standardization, National University Extension Association, 1924. For definition of terms used in university extension see Report of the Committee on Nomenclature, Proceedings of the National University Extension Association, 1920: 9.



grown steadily in public favor, and, when administered with proper regard for standards of instruction, has commended itself to well-informed educators throughout the country. Especially is this true in the Middle West and in the Far West. It is one notable means for democratizing higher education.

Mr. Arthur J. Klein, in a report made for the United States Bureau of Education in 1920, pointed out that correspondence work that year was conducted by noncommercial institutions in 39 states. In all but one of these states the work was conducted by state-supported institutions. Of the 73 listed, 61 were supported by public funds; twelve were privately endowed. For 1922 thirteen institutions reported an enrollment, including credit and non-credit courses, of more than 37,000.

Correspondence instruction is conducted entirely through the mails. The purpose is to bring university instruction within the reach of isolated students who cannot be served by the class system. The appeal is made to the same groups of people who have been mentioned under topic 1 above, but in this case the individual and not the class is the unit. The essential features of the system are the teacher's lesson assignment, the student's recitation report, the student's corrected and annotated paper, and the final examination.

*a. Preparation of courses.* The basis of any correspondence course is a series of carefully prepared typewritten or mimeographed assignments covering in some detail the unit to be undertaken. The assignments are rather generally standardized at the rate of eight assignments for each semester hour of credit. In general the assignment represents an average week's work on the basis of one hour a day for study. Sometimes all of the lesson material is contained in the assignment sheets; more commonly one or more printed texts are also used.

The typical assignment sheet contains directions or suggestions for methods of study, an outline of the work to be covered for the student's report, references to the ground to be covered in the texts, a list of required or supplementary readings, the elucidation or interpretation of knotty points, certain special problems, bibliographies, and, finally, a list of questions, problems, and topics as the student's task for his written recitation or lesson report. These questions and problems are carefully prepared so that they may not be answered directly from the text. Ideally they are of the type to call for the organization of material, the collation of opinions, the exercise of independent judgment, and the expression of the individual point of view. Careful and specific directions are usually given for the preparation of the lesson reports. The use of the local library is enjoined, and it is sometimes

suggested that the student converse on the given topic with well-informed people of his acquaintance.

It is clear that the instructors of such courses must be selected with much care. The one who prepares the course is usually the one who also teaches it. He should be a man of broad human sympathies who believes in the correspondence method and has a personal interest in his students. He should have sufficient imagination to be able to visualize his student in his isolation and thus be able to supply the encouraging word in times of discouragement.

The compensation of the instructor comes in two ways. He is paid from \$50 to \$300 for preparing the course, and he is paid from 25 cents to 75 cents a paper for reading and correcting student reports. The course as written must be acceptable to the department concerned.

*b. Student lesson reports.* At most institutions students are registered, and their records are kept in the central extension office. The assignments are sent out from that office, and student reports come in to the same office for record. They are then relayed to the instructor. In The University of Chicago less of this work is done in the central office, and the student deals more directly with the instructor. As much information as possible about the student is obtained on the registration blank, so that the instructor may be informed about the registrant's previous preparation and training, his library facilities, and other details of educational import.

The approved teaching methods in dealing with student lesson reports are as follows:

- (1) The correction of errors in the manuscript.
- (2) Marginal and interlinear criticisms, suggestions, and commendations.
- (3) Citations to pertinent passages in texts or collateral reading.
- (4) References to opposing theories or points of view.
- (5) Queries tending to stimulate further study and reflection.
- (6) Personal and individual advice and encouragement with the view of making effective the personality of the teacher.
- (7) Grading the paper or returning it to the student for rewriting.

When necessary these standard methods are supplemented by personal letters from the instructor to the student. A tendency to be guarded against is the disposition of some students to rush their work through. They answer the questions hastily and superficially, overlooking the fact that time is an essential element in learning, and that meditation and reflection are factors not to be neglected. As a preventive of this evil it is customary to limit the number of assignments per week that will be furnished. On the other hand, it is necessary to provide that reports be handled very promptly and expeditiously when

once they arrive in the central office. Some time is necessarily lost in relaying them to the instructor. Usually more time is lost by the instructor's laying them aside under the pressure of other business. Protracted delays in handling manuscripts are a serious detriment to the efficiency of correspondence instruction. The student whose work does not progress regularly and systematically tends to lose interest; this one factor accounts for much student mortality. Some institutions therefore provide, for popular subjects, full-time instructors whose duties are solely to prepare and teach correspondence courses. The advantage thus gained is offset, however, by the fact that an instructor confined to this kind of work, and thus deprived of personal contact with students in classes, sometimes finds his teaching becoming devitalized and stale. Student mortality is also somewhat lessened by the practice of permitting renewal of registration for a small fee at the expiration of the maximum period for completion of a course, usually one year. In the most efficient correspondence departments this mortality is not over 50 per cent. In the commercial correspondence schools it is believed, although trustworthy data are scanty, that this percentage is very much higher.

*c. Examinations.* Final examinations are always required where credits or certificates are sought. In other cases they are usually optional. The student is urged to take the examination as soon as possible after the completion of the course, while the material is fresh in his mind. The time limit for writing the final paper is usually the same as in residence, two or three hours. Care is taken to have several sets of final examination questions for each course, so that they may not be passed on from one student to another. In the last few years the use of the new-style objective tests has grown in popularity. These tests are peculiarly well adapted to the conditions of correspondence instruction.

The general rule is that the final examination in a correspondence course must be taken at the university or under conditions approved by the university. In the former case the matter is simple. At the time set the student reports to a representative of the extension division at the central office. The examination is then given under the conditions of supervision ordinarily observed by the university. If the student lives at a distance and cannot come to the central office, then another method is used. The examination is sent sealed to a public-school officer, usually the superintendent of schools or the principal of the high school, in the town nearest to the student's residence. On the day set the student reports to this officer and writes the examination in his presence and under his supervision. This officer then sends to the central office, in a sealed envelope, the examination

and the questions, together with his certificate that the examination regulations have been properly observed. In due time the mark for the course is filed in the registrar's office and the student is notified. Naturally enough, in a course given under these conditions, much more weight is attached to the examination grade than to any other markings in determining the final grade for the course.

*d. Fees and credits.* Mr. Hall-Quest, in the study already cited, shows that in 27 subjects commonly taught by correspondence the mean number of assignments is 24.25 and the average fee for a course is \$11.24. In the matter of fees there is considerable variability among the many institutions; yet there is distinguishable today a central tendency to charge at the rate of \$5 per semester credit hour.

It is common in most institutions to offer both credit and non-credit courses by correspondence. The inclusion of non-credit courses is probably to be ascribed to the example of the commercial correspondence schools. These schools began on a strictly utilitarian basis, and in their curricula the subcollegiate and vocational elements still predominate. The university correspondence departments offer secondary-school subjects for the benefit of those individuals who lack, wholly or partially, high-school advantages. Some of these students are preparing for college or for other institutions in which high-school preparation is a prerequisite for entrance. There are also certain courses, desired by shopmen, mechanics, draftsmen, bank clerks, and others, which are not on the university level or are not in the university curriculum and may not, therefore, be given for credit, but which may nevertheless be effectively conducted by university instructors. Such courses are included in the program of offerings as a part of the institution's service to the state. In the 29 principal institutions of the country which conducted correspondence courses during the year 1923-1924, about 80 per cent of the courses offered were credit courses.

As already stated, credits are usually granted on the basis of eight assignments to one semester hour of credit. In general, students may theoretically complete as much as one-half of the work for a degree through correspondence. Practically this theoretical ratio is never approached: it would take too many years to accomplish it, and the range of offerings is not wide enough, especially in the laboratory sciences and in the subjects of the junior and senior years.

*e. Advantages of correspondence instruction.* It is plain from what has already been stated that correspondence study has its own peculiar advantages. Other things being equal, class instruction is always to be preferred; nevertheless, when the latter is not available, the cor-

respondence method offers a fair substitute. Especially is this true of certain subjects in the curriculum. Among the advantages claimed for correspondence study are the following :

- (1) The student must complete each lesson in its entirety ; " bluffing " is out of the question.
- (2) Initiative, independence, and perseverance on the part of the student are stimulated and fostered.
- (3) Each student begins when he is ready and progresses at his own pace ; he is not hampered by duller fellow students or unduly accelerated by brighter ones.
- (4) He studies and recites at times and places most convenient to himself.
- (5) He gets the personal and individual attention of the instructor.
- (6) The courses are available to anyone at any time and any place.

*f. Disadvantages of correspondence instruction.* There are defects of the system of correspondence instruction which are obviously inherent in the system itself. Other unfavorable aspects of the method may be eliminated as experience develops a technique and methodology specifically adapted to the conditions. The following disadvantages are commonly charged against correspondence study :

- (1) Class emulation and rivalry are absent, and therefore the reciprocal meeting and stimulation of minds is lacking.
- (2) Loneliness and discouragement frequently cause courses to be interrupted or dropped.
- (3) The effect of regular periodical class meetings in fostering methodical and systematic preparation of lessons is lost.
- (4) The stimulating and driving power of the personality of a good teacher is minimized or lost.
- (5) The lack of library material and laboratory essentials presents almost insuperable difficulties.<sup>12</sup>

The fact should be noted in passing that at one or two institutions, notably at the University of Wisconsin, a combination of correspondence instruction and tutorial or group instruction has been worked out. In Wisconsin the state has been divided into districts, in each of which is located a central office, a superintendent or manager, a clerical and promotional force, and a few instructors. The students in these districts enroll as correspondence students in the office at the university and send their lessons there. They have the privilege, however, of

<sup>12</sup> For a more detailed report on correspondence study in universities and colleges see Arthur J. Klein, *Correspondence Study in Universities and Colleges, United States Bureau of Education Bulletin No. 10*, 1920. For a careful study of commercial correspondence schools see John S. Noffsinger, *Correspondence Schools, Lyceums, Chautauquas*. The Macmillan Company, 1926.

going once a week or oftener to the district office for consultation with instructors and for needed help. In this way some of the disadvantages of correspondence instruction are lessened or removed. Such a form of organization, it must be said, is very expensive to maintain and is followed by very few institutions.

3. *Short courses.* In the effort to adapt the educational program of the universities to the varying needs of the population through the medium of university extension it has been found that there is a demand on the part of special groups for courses given in shorter and more circumscribed units than the normal semester courses. The demand is for highly intensive treatment of a narrowly limited field. This is accomplished by bringing the group together for a period varying from two days to two weeks, during which time the whole day, and occasionally the evening, is devoted to lectures, demonstrations, clinical work, and laboratory experiments covering the desired subject. Highly qualified persons, expert in their several lines, are employed as the lecturers. The content value of the material is emphasized, and credits are in no wise involved. These brief, intensive drives upon a special field of knowledge are called short courses or institutes, and they are coming to occupy a larger and larger place in the program of extension activities. Their chief characteristics are brevity, intensity, and concentration upon a narrowly limited field of subject matter. Many of these short courses partake of the nature of postgraduate courses and are attended solely by holders of college degrees. Doctors come for a three-days course in obstetrics or pediatrics, or perhaps a one-week course in physiotherapy; dentists attend for a week in crown and bridge work, or for two weeks in prosthetics; merchants enroll for a one-week institute in retail merchandising; a bankers' institute specializes in certain specific problems of banking; accountants subscribe for a short course in income-tax accounting; women's clubs are given a short course in citizenship; and so on through the several sections of society. These short courses and institutes are strongly utilitarian and practical in nature and bear directly upon the vocations concerned.

The purpose of these short courses may be briefly summarized as the effort to bring and keep knowledge up to date. The advancement of science, both pure and applied, is very rapid. New discoveries and inventions are being announced from day to day, new techniques are being developed, new theories promulgated, new methods, devices, and forms of organization put in practice, new sources of information made available, new systems of economy and efficiency devised. A professional man who has been out of school ten years begins to fall

behind the times unless he uses every means for keeping up to date. Through the short course the practical man keeps in touch with the theorist. The short course is a device for renewing one's knowledge, keeping in touch with changing procedures and techniques, and moving abreast with the best and most advanced theory and practice of the day. In a busy and hurrying world the short course or institute in his special line keeps a man up to date.

The University of North Carolina has made a notable contribution to this form of instruction by organizing circuits for doctors, or peripatetic short courses. A medical specialist is sent around to hold clinics, give demonstrations, and deliver lectures in each one of a group of towns, visiting each town on the same day every week. The groups are revisited until each town has had from six to twelve of these visits. A somewhat similar practice is followed in Wisconsin. In Michigan the university medical school collaborates with the state board of health and the several medical societies in sending medical lecturers throughout the state. In Minnesota the university conducts short courses in the lecture rooms of its medical school, with the use of its laboratories and clinical facilities. It also conducts traveling postgraduate medical courses in several centers of the state. Its most notable contribution, however, has been its short courses for dentists. Every winter it holds, in the laboratories and operating rooms of its college of dentistry, from six to ten short courses in the several specialized branches of dentistry. To these courses are admitted only graduate, practicing dentists.

The institute of merchandising has become popular with the extension divisions of the universities of Indiana, Kansas, Colorado, Utah, Arkansas, Minnesota, Washington, and Virginia, among others. The merchants of a given town subscribe for an institute, usually under the auspices of the local commercial club. The university then arranges the program, engages the lecturers, and organizes the work. The institute usually lasts a week. Proprietors and salespeople of all the stores of the town attend. Lectures are delivered in the morning, at noon, and in the evening. In the intervals the lecturers are available for consultation. The lectures usually cover such subjects as store organization, salesmanship, advertising, store accounting, credits, window dressing, and kindred subjects. A marked improvement in efficiency of retail merchandising is said to follow one of these institutes.

The University of Minnesota, through its extension division, has conducted for more than ten years a unique short course in the subject of embalming. The course lasts full time for twelve weeks and requires a four-year high school course or its equivalent for entrance. In 1928 this course was lengthened to twenty-four weeks. The students

are given instruction in anatomy, bacteriology, chemistry, psychology, business methods, mortuary law, public sanitation and hygiene, and the regulations of the state board of health. Lectures and demonstrations on funeral management are also given. An intensive practical course in embalming is added to the academic subjects. At the end of the short course the students take a final examination in all the required branches. This examination is given jointly by the university and the state board of health. The final marks are therefore accepted by the board, which thereupon issues to the successful candidates the license required by law whenever the other provisions as to age and experience have been met. A university certificate is also issued.

The people reached by these extension short courses may be broadly classified as follows :

- a. Professional, such as doctors, dentists, lawyers.
- b. Business groups, such as bankers, merchants, accountants.
- c. Vocational groups, such as teachers, embalmers, policemen, firemen.
- d. Civic organizations, such as women's clubs, city officials, boy-scout and girl-scout leaders.

The objective of all these courses is the enhancement of business, professional, social, and political efficiency, to the resulting profit of society at large and good citizenship in general.

### THE ORGANIZATION OF INFORMAL INSTRUCTION

1. *Extension lectures.* It will be recalled from the brief historical sketch at the beginning of this chapter that extension teaching began with single lectures or courses of lectures delivered by university men before miscellaneous audiences. These lectures, often illustrated, were both informative and entertaining. They opened up new fields of knowledge, gave a stimulus to further reading and study, and created interest in the work of scholars and investigators. These lectures gradually evolved into a more formal and systematic type of work, including discussion by the listeners, questions addressed to the lecturer, the use of printed or mimeographed outlines or syllabi, the assignment of collateral reading, and final examinations. From this the next step was easy, — the organization of classes for regular instruction in centers away from the university. As a parallel development came also instruction by correspondence.

It was the lecture system that was first naturalized in the United States. This was at the basis of the original Chautauqua movement and of the 1890 organization of the American Society for the Exten-



sion of University Teaching. In this country also the class system and correspondence instruction were the natural development.

When The University of Chicago opened its doors, in 1892, it offered, through extension, opportunities for lecture study, class instruction, and correspondence teaching. The first of these activities was maintained until 1912, when it was turned over to the university lecture association.

Nearly all of the university-extension divisions, as they were successively organized, stressed the lecture system. In course of time, however, the class system and correspondence instruction gradually supplanted the lecture system as a major educational activity. The growth of the university lyceum, also, with its professional lectures and artists and its emphasis on entertainment, did much to bring about the decay of the old-fashioned university-extension lecture.

The extension-lecture system still survives but in a somewhat attenuated form. One reason for this is the lack of demand. The diffusion of knowledge in popular forms has become so extensive that the older form of extension lectures no longer has a distinctive mission. The practice of offering academic credit for this type of work has almost entirely ceased.

As administered at present, extension lectures are of three types: inspirational lectures given at college or high-school commencements, or before such organizations as Rotary and Kiwanis clubs, commercial clubs, teachers' associations, and the various types of social clubs; cultural lectures, delivered before special organizations, such as study clubs, women's clubs, art and musical societies; informational lectures, dealing with subjects on which the speaker is unusually well informed or has special sources of knowledge. It is in the last group that most university-extension lectures fall. Here men lecture on subjects within their own special fields of instruction, — matters upon which they can speak with authority. The subjects relate to such matters of current public interest as taxation, municipal and state government, public health, conservation of natural resources, forestry, evolution, new discoveries in science, the results of exploration, and critiques of current authors. These lectures are usually single units, although they are occasionally given in series.

Originally an attempt was made to give academic credit for lecture courses in series, but that has now virtually been abandoned. The communities are usually charged a small fee in addition to traveling expenses. The fee to the lecturer varies from \$5 to \$30. The University of Michigan sets aside a sum each year, approximately \$10,000, with which it subsidizes about 300 free lectures for the communities

of the state. The University of California spends a much larger annual sum in making up the difference between the amounts received from the communities and the cost of the service. Communities are usually charged from \$15 to \$30 a lecture and traveling expenses. Nowhere is this form of educational service self-supporting; it is necessary to supplement the fees received by contributions, some small and some large, from the university budget.

It should be added that not a few university-faculty men with rhetorical gifts have made themselves reputations as popular speakers of the inspirational, hortatory, or cultural type. Their services are in great demand, and they obtain more or less adequate compensation.

2. *The university lyceum.* The university lyceum is an outgrowth, on the one hand of the extension lecture system, and on the other hand of a combination of the historical independent lyceum and the Chautauqua movement.

The lyceum began in 1826 through the enthusiasm of one Josiah Holbrook. The plan was to have an organization in each town for the purpose of studying history, art, science, and public questions with the aid of libraries and other necessary institutions and equipment. The aim was a "universal diffusion of knowledge." In 1831 the National American Lyceum was organized in New York City, with its platform "the advancement of education, especially in the common schools, and the general diffusion of knowledge." This organization lasted eight years and accomplished a great work. In New England especially almost every community had its lyceum. The people met once a week to hear lectures and debates by the bright young folks of the community on all the major political and social issues.

The next step was that of engaging distinguished men as lecturers. Among the men who then devoted part of their time to lecturing before these lyceums were Emerson, Thoreau, Lowell, Holmes, Hale, Beecher, Greeley, Dana, and Curtis. After the Civil War an association of lyceums was formed for the coöperative booking of lectures. Then came the first Lyceum Bureau, organized in 1868 by James Clark Redpath for the professional and business engaging and booking of lecturers as well as artists in music and other lines. Thus the lyceum became commercialized. Nevertheless it had already accomplished a mighty work in education.

The beginnings of the Chautauqua movement have been touched upon. Reading circles were organized over the country to read and discuss books selected by the Chautauqua directors. At Chautauqua lectures were provided, and then concerts and occasional plays. As was inevitable, Chautauquas were started elsewhere in imitation of the

parent organization ; but this took organization and capital. The last step was the organization of traveling or circuit Chautauquas, in which whole programs were arranged and sent over selected routes, staying from three days to a week in each place. The whole company of lecturers and artists was booked and routed like a theatrical troupe. At the present time even tents are carried, circus fashion, in which the programs are presented. Much of the original educational ideal has been lost, and the aim is now chiefly entertainment.<sup>13</sup>

The university lyceum as a prominent feature of extension work has thus far been developed largely in the state universities of Wisconsin, Kansas, Minnesota, and North Dakota. The ideals and objectives are to bring to the small towns and rural communities, in series, lectures, concerts, dramatic readings and performances, and other forms of entertainment. Many of the small towns, of course, have no library, no concert hall, no theater. The social life is comprised in the school, the lodge, the church social, and the dance. There is more or less stagnation through isolation, especially during the long winter evenings. The regular numbers of the lyceum course are intended to raise the standard of taste and appreciation in matters artistic and literary, to widen the mental horizon, to direct some of the intellectual currents of national life through the community, to awaken interest in subjects of discussion not purely local or parochial, and withal to furnish clean, wholesome entertainment through programs of educational and artistic merit. A by-product is found in the salutary effect on the community of the coöperative effort required to finance and manage the course.

The plan ordinarily pursued is to sell the community a course of from three to five numbers, to be delivered at intervals during the late fall, winter, and early spring. The extension division has previously contracted for "blocks of time" with the lecturers, concert companies, or artists, popularly known as "the talent." The university therefore acts merely as a bureau, or entrepreneur. The community is charged enough by the university to pay the fees and traveling expenses of the talent, the cost of selling the course, and a slight margin for overhead expenses. This part of the extension service is therefore virtually self-supporting. The numbers are usually divided in the proportions of one fifth lectures, two or three fifths music, and the remainder mixed entertainments or drama.

A very small proportion of the lectures are delivered by university men. Some are of the inspirational type, including the so-called

<sup>13</sup> For details of the origin, development, and methods of the lyceum and the Chautauqua see Noffsinger, *op. cit.*

"mother-home-heaven" message. Others are semiscientific, civic, or educational. Many are the messages of men who have accomplished something and are out to tell the story. All the lectures are of the popular type, adapted to the miscellaneous audience.

Music is, on the whole, the most popular offering. There are glee clubs, male quartets, string quartets, musical duos and trios, mixed quartets, and occasionally fair-sized orchestras. There is some tendency to introduce novelties in musical instruments and bizarre combinations. The artists and the music are probably far better than the community can aspire to in any other way except through the phonograph or the radio.

Among the miscellaneous offerings are usually found dramatic readings and performances as well as pageants and operas. The plays must necessarily be selected with a view to simplicity of setting and of characterization. While the acting is usually amateurish, occasionally some very creditable work is done. This has been particularly true since the genesis of the "little theater" movement in the universities of North Dakota, South Dakota, and North Carolina. In these days the good traveling theater has become almost extinct. Here we have perhaps an acceptable substitute.

Some question has been raised as to the legitimacy of university participation in the lyceum movement. It may be defended, probably, only from the standpoint of the educational value of the offerings and of the value to good citizenship in general of clean and wholesome entertainment. It would appear, therefore, that great care should be used in selecting offerings of real merit. In any event, the future of the lyceum is somewhat dubious because of the influence of the automobile, the phonograph, and the radio.

3. *The university radio.* The radio has introduced a new element and a new medium among the facilities of university extension. In 1922, in the United States, fifty-seven colleges and universities were reported as having broadcasting stations. Forty-seven of these colleges and universities were broadcasting educational and musical programs. The figures change rapidly from day to day, but there are probably now in the United States more than a million and a half radio receivers, representing possibly four million radio listeners. Here is a great educational opportunity.

The university physical equipment for this work consists of the regular broadcasting apparatus, frequently established in connection with the experimental and teaching work of the department of electrical engineering. In addition there is a studio with a piano and the regular microphone equipment. When a university does not have its

own broadcasting equipment, it will sometimes arrange to transmit university programs from a commercial studio. Sometimes a university studio alone is set up, connected with the commercial station by remote control.

The extension division details a staff man as director of programs. These programs are selected so as to present university material of a type not competitive with commercial material. The program time is also carefully selected so as to avoid interference. It is generally recognized that the resources of a large university are a regular treasure house of good radio-program material. The program director capitalizes this fact in selecting his program material.

The objectives aimed at in university broadcasting may be summarized as follows:

- a.* To present a cross section of university life and an intimation of its atmosphere.
- b.* To give samplings, through single lectures or series, of numerous fields of knowledge and thus to stimulate public interest in these subjects.
- c.* To summarize present-day knowledge and the results of recent researches in subjects of current interest.
- d.* To give expert advice and instruction in matters of public health and social welfare.
- e.* To contribute to the elevation of public taste and appreciation through well-selected programs of good music.
- f.* To offer the opportunity for a worthy and profitable use of leisure time.
- g.* To inform public opinion on current questions of vital interest, and so promote intelligent democratic citizenship.

The lectures offered on radio programs are usually on subjects of scientific, literary, historical, or political interest. While presented in more or less popular form and therefore adapted to general consumption, these lectures are nevertheless presented from the scholarly or academic point of view. The musical programs are the offerings of the university department of music, and the selections are chosen with an eye to intrinsic merit. Occasional debates by student teams on subjects of current interest lend variety to the programs. The whole service so far has been financed from the university budget.

Correspondence courses by radio are a relatively late development. Lessons are broadcasted by the instructor, and these, of course, may be listened to by anyone. Only enrolled students, however, have the privilege of sending in written lessons and having them corrected. Languages are particularly well adapted to treatment in this novel manner. The scope as well as the technique of this method of instruction are still in the experimental stage, but the future certainly holds forth dazzling possibilities.

## SERVICE FUNCTIONS OF UNIVERSITY EXTENSION

In addition to the formal and informal instructional or teaching functions of university extension we find also a group of activities which may be called informational or service functions. The more important of these will be briefly described.

1. *The municipal reference bureau.* The municipal reference bureau is in essence a bureau of information for city officers and for citizens who are interested in problems of municipal government. The service is rendered through the use of collections of documents and by putting city officials in touch with experts or specialists on the various problems which may arise during the course of administration.

There is usually an administrative secretary at the head of the bureau, with several staff men and a clerical force. The equipment consists of a library; files of documents, reports, and monographs; a collection of codes; collections of public documents relating to municipal and state government, including charters, model ordinances, reports, etc.

The services rendered may be stated in summary as follows:

- a. Charter and ordinance writing and revision.
- b. Specific researches and investigations for municipal officers.
- c. Consultation service on municipal problems.
- d. Legal opinions.
- e. Advice on the improvement of administration when invited by officials.
- f. Reference service on municipal legislation.
- g. Clearing-house facilities to graduate students and members of the faculty for obtaining trustworthy information on municipal affairs.

Among the methods used in making this service available are the following:

- a. Conferences of municipal officers and legislators.
- b. Annual conventions for discussion of municipal problems and exchange of ideas.
- c. Publication of a periodical of news, information, and facts about municipal government, and a digest of municipal progress.
- d. Publication of monographs and bulletins containing results of scientific investigations of municipal problems.
- e. Application of expert knowledge and specialized training of members of the university faculty to specific problems of municipalities.
- f. Affiliations and cooperative alliances with other organizations interested in phases of municipal government and administration, such as state leagues of municipalities; associations of mayors, city clerks, city attorneys, and county officials; taxpayers' associations, state-tax conferences, waterworks associations; the National Municipal League and the American Municipal Association.

Not infrequently the municipal reference bureau at the university is made the executive office of the state league of municipalities, to the mutual advantage of the two organizations. The bureau derives no revenues from its service and is therefore wholly dependent upon the university budget.

As commonly stated, the following are the objectives kept in view by a municipal reference bureau :

- a.* To bring the theory and practice of municipal government and administration more nearly together.
- b.* To apply objective methods to the interpretation and solution of public problems.
- c.* To diffuse and make generally available the facts of municipal experience in America and abroad.
- d.* To kindle esprit de corps among municipal officers and make them conscious of the importance of their functions.
- e.* To buttress the foundations of democracy by making local government strong, intelligent, and efficient.

*2. The bureau of visual instruction.* The purpose of this bureau is to stimulate and foster the use of visual aids in educational institutions for instructional purposes. The equipment consists of projection apparatus, fixed and portable; educational films and lantern slides; charts and graphs. These are lent to schools, churches, and other institutions either free or at a small rental charge.

The methods used are (1) purchase or manufacture of educational films, slides, and charts; (2) development of the technique of teaching through the use of visual aids; (3) popularization of visual aids to teaching by the circulation of films, slides, charts, and other materials among schools and other educational institutions. Among educational films may be included not only illustrations of technical processes and the workings of nature but also the picturization of the literary classics, such as "Silas Marner," "David Copperfield," and "Les Miserables."

The purposes of this service are

- a.* To aid in making teaching more vivid, graphic, and stimulating by the use of visual aids.
- b.* To reduce the expense of securing and using these aids by keeping one collection at a central bureau in constant circulation.
- c.* To encourage the manufacture of visual-aid material on subjects educational but not commercially profitable.
- d.* To foster a cosmopolitan attitude of mind by depicting foreign scenes, peoples, customs, and industries.

The initial outlay for the purchase or rental of the apparatus, films, slides, and other material is as a general thing provided from university

funds. Maintenance, replacements, and repairs are secured through small rental and service charges. Transportation of materials is always charged to the borrower.

3. *The drama service.* From time to time high schools, churches, and community clubs present plays and pageants on the local stage and with local talent. This may be for the purpose of raising funds for some specific cause or merely to give outlet to the primal urge for dramatic expression. A vexatious difficulty is usually encountered in the selection of a suitable play, taking into account the available performers and facilities. The publishers will send catalogues containing titles and very brief descriptions, but a wise choice requires that the plays themselves be carefully examined. Herein lies the mission of the extension drama service.

A library is built up, consisting of books and manuscripts of plays, pageants, operettas, and other dramatic material suitable for amateur production. This material is carefully catalogued and classified (tragedy, romantic comedy, farce, etc.) with indications of the setting, the number of male and female characters, and other pertinent information.

When a request for material comes in, a half dozen or more plays are picked out which conform in general to the specifications set forth in the letter. These plays are then sent by mail to the inquirer; he reads them and makes his selection, and then returns *all* the books to the office. There is a strict injunction, to which the borrower must subscribe, that no parts are to be copied out and that the necessary working copies of the play selected must be purchased from the publisher. It is customary, in sending in the order to the publisher, to acknowledge the services of the extension division.

On these conditions publishers are usually quite willing to keep the extension library well stocked with free copies of suitable dramatic material. The borrowers pay the costs of transportation both ways. The only other expense involved is a slight one for clerical help. On request the drama service will also assist the borrowing organization in getting in touch with a competent dramatic coach.

4. *Community-welfare service.* Under various names nearly every extension division has a department devoted to the building up of community solidarity and the instilling of the spirit of community coöperation, especially in matters social, educational, or spiritual. The aim is to develop integration and the consciousness of organic community life. Among the various kinds of service furnished by such departments are the following:

a. Instigating the organization of community clubs, parent-teacher associations, civic-welfare societies, coöperative organizations, and commercial clubs.



- b.* Assisting in the organization and administration of community social surveys.
- c.* Assisting with the programs of community meetings.
- d.* Developing among small-town merchants better merchandising methods and social-service ideals.

Some extension divisions have much more elaborately organized departments of this kind than others. For example, Indiana University has worked up a strong working affiliation with the state parent-teacher association and is conducting a health education campaign through public-health nurses. The University of Wisconsin furnishes annual study programs for women's clubs and assists with reading matter and references. It also campaigns for the use of school buildings as community centers. The University of Minnesota has a similar working affiliation with the State Conference and Institute of Social Work.

The objectives aimed at by these departments may be summed up as follows :

- a.* To make the small community a better place in which to live and work and rear children.
- b.* To contribute to the spirit of brotherhood and community unity.
- c.* To develop a wholesome and self-dependent community life.
- d.* To allay friction, suspicion, or hostility between town dwellers, particularly tradespeople, and the adjacent rural population.

The cost of administering this work, chiefly clerical help and postage, is defrayed by the university. The outside services are largely self-sustaining.

5. *Package-library service.* Extension divisions have found the package library a useful device for furthering the diffusion of authentic information. As is implied by the name, a package library is a selected assortment of books, pamphlets, newspaper and magazine clippings, and public documents, all relating directly or indirectly to one subject. It is put up in convenient, portable form for easy transmission through the mails. This easily accessible, carefully culled material is of great assistance to busy people in writing articles or papers, preparing debates, teaching classes, or planning programs. The element of propaganda or of partisanship is carefully eschewed.

The equipment in the central office consists of a collection of periodicals, monographs, pamphlets, government and society reports, *Congressional Records*, speeches, bulletins, statistical records, newspaper clippings, typewritten or photostatic excerpts, etc. For handling this material there are shelves, filing cases, pamphlet boxes, cataloguing

and indexing equipment, and the necessary facilities for packing and mailing.

The personnel includes a responsible head, or librarian, with a staff of readers, cataloguers, file clerks, clipping clerks, and packers and mailers.

The methods generally followed in the central office are the following :

- a. Clipping, copying, or otherwise extracting printed material and pasting or fastening it between covers for preservation.
- b. Keeping this material constantly up to date.
- c. Filing the material by subjects, catalogued and indexed.
- d. Assembling the material on any given subject in small portable parcels for transmission through the mails.
- e. Keeping this material constantly in circulation and constantly renewed.

Among the generally accepted objectives of this type of extension service are these :

- a. To encourage public debate and discussion based on authoritative information.
- b. To make readily accessible discussions from diverse points of view and unbiased information on subjects of current interest and importance, contained in the periodical literature of the day.
- c. To furnish women's clubs, debating clubs, and similar organizations with condensed and usable material for their programs and discussions.
- d. To stimulate public interest in current political, social, and industrial problems by furnishing authoritative information and illuminating discussion in popular language and in compact form.
- e. To contribute to the formation of an educated and intelligent public opinion.

The packages are sent out gratis, the borrower paying only transportation charges both ways. The material may be used for a limited time and must then be returned to the office. This service therefore produces no revenue and is a charge on the university support budget. The universities of Indiana, North Carolina, Texas, Wisconsin, and Kansas, among others, make a special feature of this type of work. In 1922 Indiana University circulated 300 package libraries a month ; the University of Texas averaged about 35 a day. In the biennium 1920-1922 the University of Wisconsin lent 17,114 package libraries, an increase of 53 per cent over 1914-1916.

6. *Promotion of state-wide contests among schools.* One of the interesting and valuable functions of extension divisions, especially in the state universities, is the organization and promotion of state-wide contests in various lines of endeavor among the schools of the commonwealth. As a general rule the high schools are the competitive

elements, as being more closely affiliated with the university; but in some instances the elementary schools also are brought into participation. The original idea was probably to offer some intellectual counterbalance to the overweening interest in athletics; of late years, however, contests in sports and games have also been inaugurated.

The types of organizations promoted have been (1) high-school debating leagues, with their variations, such as forensic leagues and discussion leagues; (2) interscholastic leagues, in several lines of school activity; (3) state music contests; (4) drama and declamation contests; (5) interscholastic athletic leagues, functioning in basketball tournaments and field meets.

For years the University of Wisconsin and the University of Kansas have sponsored high-school debating leagues. The University of Texas has been notable for an active and vigorous interscholastic league in which contests are held in the common-school branches as well as in sports and games. The University of Minnesota is responsible for a very promising state-wide school contest in music. The University of Missouri also conducts a music contest.

The methods used in promoting these organizations and contests vary somewhat, but in general may be described as follows:

*a.* Aid and advice in organization. The organization is usually composed of school men and is nominally independent of the university but closely affiliated with it.

*b.* Provision of an executive office and a permanent secretariat at the university.

*c.* Unbiased and unprejudiced selection of judges, critics, and other officials.

*d.* Arrangement of elimination contests by districts, leading to a final contest at the university and under its auspices.

*e.* Publication of bulletins of information, usually containing the plan of organization, the rules and regulations for contests, and certain outlines, bibliographies, selected references, and other useful material.

Among the more generally recognized objectives which this type of service aims to effect are these:

*a.* To instill the spirit of true sportsmanship.

*b.* To give wise guidance in the development of athletics in the schools.

*c.* To lend effective incentives to the development of ability to think clearly and speak convincingly.

*d.* To stimulate and foster intelligent love and appreciation of the fine arts as worthy elements in true education.

*e.* To set standards in the selection of materials (music, literature, drama, etc.) and in their performance or presentation.

*f.* To emphasize the importance of scholarship, intellectual ability, and discriminating taste.

7. *Miscellaneous activities.* There are miscellaneous activities of every extension division which are not covered by any of the foregoing topics. Among the more important of these are the following:

a. Publication and circulation of bulletins and monographs on educational matters and other subjects of public interest.

b. Establishment of a clearing house through which information, services, and facilities, concentrated in the university, may be made readily available to the public.

c. Coöperation with other organizations for the promotion of adult education. The most important of these are the National University Extension Association, which had, in 1926, 43 institutional members; the Workers' Educational Bureau of America, which, in 1922, had 26 workers' colleges and schools, in 22 cities of this country; the American Association for Adult Education; and the World Association for Adult Education, in which many institutions in America hold membership.

One of the important problems of every extension division is summed up in the word "publicity." This implies that the public must be informed concerning extension activities, and that these services and opportunities must be "sold" to the people. The methods used embrace these two:

a. *Advertising.* This is done by means of placards in street-car windows; window cards and posters in shop windows, offices, and factories; reading notices in daily newspapers; and the publication and circulation of a periodical, or "house organ."

b. *General publicity.* This consists of the circulation, to a wide mailing list, of class schedules, advertising folders, form letters, pamphlets and leaflets, and the regular descriptive bulletins of the department.

The best advertising, of course, is the word-of-mouth reports made voluntarily by students to their friends. Much care must be taken to insure that advertising, while direct, forceful, and pungent, is dignified and in keeping with the tone and best traditions of the university.

The "extension spirit," or esprit de corps of the organization among both students and faculty, is maintained by meetings, formal and informal; by social functions, usually managed by the students; by the circulation of the house organ, full of news items and stories of human interest concerning students and faculty; and by the cultivation and maintenance of friendly personal relations between individual students and members of the faculty.

## ORGANIZATION AND GOVERNMENT

The form of organization for extension work in the different institutions has much of similarity. Usually the work is intrusted to a division, coördinate with the several schools and colleges, with a director or dean at the head. The extension division is ordinarily vested with jurisdiction over all the extramural teaching activities of the university. Its own faculty legislates for its internal government and policies, and its dean reports directly to the president and trustees. In matters of standards and credits the division is subject to the supervision of the highest faculty body, usually the all-university council or the senate,— a supervision commonly exercised through a faculty committee. Internally the different functions are segregated in departments or bureaus, each presided over by an administrative head. The remaining personnel consists of organizers, secretaries, stenographers, and clerks.

As to the financial side, the aim is to make the work as nearly as possible self-supporting. In practice the division is allotted a relatively small amount from university support, and is permitted to turn back its fees into its own budget. Expansion is therefore conservative and in proportion to the development of financial resources. The members of the extension staff hold rank and salary on the same terms as other members of the university faculty. There is, however, greater difficulty in securing men of promise and ability for this work, because extension work is still too often regarded as a mere by-product of the regular university activity, and the paths of academic preferment are not equally open to extension teachers. This partly accounts for the frequent necessity of employing part-time men.

## THE FUTURE

University extension is no longer an interloper but has become a regular member of the academic family. There is no reason to believe that it will not develop and expand greatly as long as present economic and social conditions do not permit all men and women with the requisite natural capacity, to participate on a full-time basis in the privileges of higher education. Civilization now demands an instructed citizenship, and university extension must continue to bear its share of the load of adult education.

Two tendencies are now becoming apparent. One is toward standardization of courses, credits, and levels of instruction, both in class work and in correspondence teaching. This will make for a free and

equal exchange of credits among the participating institutions. The other tendency is toward the arrangement of sequential courses or specialized curricula. There are already a number of one-year courses. The next step will be the formation of two-year curricula, with the possibility of a junior-college certificate at the end. This will do away with much of the present desultory, hit-and-miss selection of courses. The Harvard idea of a separate and distinct extension degree has not met with favor. It is doubtful if it will be copied elsewhere.

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PART II. ORGANIZATION AND ADMIN-  
ISTRATION OF HIGHER EDUCATION  
IN AMERICA





## CHAPTER XIII

### SELECTION OF STUDENTS

By J. B. JOHNSTON, Dean of the College of Science, Literature,  
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The selection of students is educational guidance. Competent educational authorities advise a boy to enter a given college or school because due investigation seems to show that he is capable of making good use of the opportunities which that institution affords. Another boy is advised to enter another kind of school or apprenticeship or employment because this offers opportunities suited to his capacity, interests, and traits. The second boy may be refused admission to the first institution because this would be neither to his advantage nor to that of society, which the college exists to serve.

#### HISTORICAL SKETCH

*Earlier period.* The curriculum leading to the A.B. degree in Harvard College in the seventeenth century consisted mainly of Greek and Semitic languages, of etymology, syntax, grammar, rhetoric, and logic, of Bible study, divinity, declamations, and disputations. Freshmen had fifteen-minute lectures in physics, and seniors had work in arithmetic, geometry, and astronomy.

For such a curriculum the natural entrance requirements were Latin and Greek, and the grammar school of the period served admirably as the preparatory school.

Higher education in the modern democratic and liberal sense was unknown in colonial times. Before the revolution the colleges had as their main purpose the training of ministers. The following admission requirements for Harvard in 1642, given in "Harvard Statutes for 1642-1646," and for Columbia in 1786, given in "Statutes of Columbia College for 1785," represent the earliest and the latest, the narrowest and the most liberal, entrance requirements of the period :

When any schollar is able to read Tully or such like classical Latin author extempore, and make and speake true Latin in verse and prose, suo (ut aiunt) Marte, and decline perfectly the paradigms of names and verbes in ye Greek

tongue, then may hee bee admitted into ye College, nor shall any claime admission before such qualifications.<sup>1</sup>

No candidate shall be admitted into the College, after the second Tuesday in April, 1786, unless he shall be able to render into English Cæsar's Commentaries of the Gallic War; the four orations of Cicero against Catiline, the four first books of Virgil's *Æneid*; and the gospels from the Greek; and to explain the government and connection of the words, and to turn English into grammatical Latin, and shall understand the four first rules of Arithmetic, with the rule of three.<sup>2</sup>

Between these enactments two or three significant things had taken place. The introduction of arithmetic among the requirements showed some influence of practical or commercial considerations. The requirement to speak true Latin in verse and prose had been gradually given up, first in practice and then in statute. By 1800 only Latin composition was required. An intermediate step in this change is significant. In lieu of speaking Latin verse the laws of Harvard College for 1734 required the candidate "to be skilled in making Latin verse, or at least in the rules of Prosodia." This is undoubtedly in recognition of the fact that some persons could make verse and others could not, even if they knew the rules. This is therefore to be regarded as an early declaration of the propriety, in higher education, of taking into account individual differences. Generally, during the colonial period, the requirements in Latin became less exacting, while Greek grew in prominence.

The failure to secure even among students in college the use of Latin and Greek as living tongues may have been the cause of increasing definiteness in the specifications for admission. By 1800 or shortly thereafter colleges carefully laid down the books and amounts which the student must have studied before gaining admission. Thus early in the American atmosphere were colleges compelled to accept form for substance, the fact of having studied as a substitute for understanding, mastery, power to use or live or be.

It is significant that these hedges or tariff walls were built about the classics at the same time that provision was being made by new schools (the academies founded in 1753, 1780, and later) for instruction in useful and practical studies which the people demanded. Parallel with Latin and Greek these academies taught such subjects as English grammar, composition, geography, algebra, geometry, natural philosophy, astronomy, music, oratory, bookkeeping, logic, and virtue.

<sup>1</sup> E. C. Broome. *A Historical and Critical Discussion of College Admission Requirements*, p. 185. Columbia University Press, 1902.

<sup>2</sup> *Ibid.* p. 200.

The influence of the practical subjects and the demands of the people were at work in the early part of the nineteenth century as they are in the twentieth. Geography found a place in entrance requirements at Harvard in 1807, at Princeton in 1819, at Columbia in 1821, at Yale in 1822; English grammar, at Princeton in 1819, at Yale in 1822, at Columbia in 1860; algebra, at Harvard in 1820, at Columbia in 1821, at Yale in 1847, at Princeton in 1848; geometry, at Harvard in 1847, at Yale in 1856, at Princeton, Michigan, and Cornell in 1868, at Columbia in 1870; history, at Harvard and Michigan in 1847, and at Cornell in 1868.

Although eight new subjects were introduced into the entrance requirements between 1800 and 1870, the amount of Latin and Greek required was gradually increased. The new studies were in part developed in the academies and preparatory schools, and in part first developed in the colleges and later pushed down to the preparatory level.

Following the Civil War came a period of ferment and of insistent demands for more progressive policies in higher education. The elective system was introduced into the curricula; instruction was offered in a wider range of subjects; the preparatory schools and the public high schools gradually took over subjects, or the more elementary treatment of subjects, previously taught in colleges. Further subjects were then added to the requirements for admission: modern history at Michigan in 1869; physical geography at Michigan and Harvard in 1870; English composition at Princeton in 1870, at Harvard in 1874, at Michigan in 1878, at Columbia and Cornell in 1882, at Yale in 1894; English literature at Harvard in 1874; one or other natural science at Syracuse in 1873, at Harvard in 1876, at Cornell in 1877, and at Michigan in 1890. In 1887 Harvard University introduced the requirement of a "course of experiments in the subjects of mechanics, sound, light, heat, and electricity, not less than forty in number, actually performed at school by the pupil." Before 1900 the effect of this and similar action on the part of other colleges was to revolutionize the methods of teaching sciences in the high schools.

Throughout the nineteenth century there was a continual extension of the branches of training required for admission to college, and at the same time the quantity requirement in the classics and mathematics was increased.

With the addition of new subjects the preparatory course came to represent a much wider range of liberalizing knowledge than was included in the total college curriculum in 1800 or for long thereafter.

*Flexibility in admission requirements.* The elective idea entered the educational system in two ways: first, through the development of

academies (already mentioned) in the period of enterprise and expansion following the Revolution; second, in the upper years of the college curriculum. It was the influence of the academies, and later of the public high schools, which led to the introduction of new subjects and the recognition of the elective principle in the preparatory course. When the high schools began to prepare students for college, they were offering, in addition to the regular classical course, other courses variously known as the Latin-scientific, Latin-English, or English course. As the graduates of these courses applied for admission to the colleges, provision was made for them by forming new curricula leading to distinct degrees (Ph.B., L.B., B.S. etc.), by allowing liberal options in the requirements for admission to the A.B. course, and by admitting special students to courses which they appeared qualified to pursue.

After a great deal of experimenting with new curricula, with varying content and diverse entrance requirements, the larger number of colleges, by about 1900, had settled down to the single A.B. degree for the academic or cultural course and the B.S. degree for the technical or scientific courses. In respect to the content of admission requirements the A.B. course was classical, the B.S. course required more science and mathematics, and the L.B. course more language and history. The drift of public interest toward the close of the century was away from the classical course. In 1884 ten of the larger institutions gave 645 A.B. degrees and 313 nonclassical degrees; in 1898 the same institutions gave 1012 A.B. degrees and 1122 nonclassical degrees.<sup>3</sup>

The new curricula in turn reacted on the high schools, encouraging the development of instruction in modern languages, sciences, history, and civil government. At the same time these new lines of work, both in college and in high school, had to face the criticism that they were patched-up courses, made up of fragments of various things intended to take the place of Greek, and that the new subjects were taught by poorly trained teachers.

Finally from all the confusion there emerged at Harvard in 1898 the point system of admission requirements, which, with refinements and revisions, has been generally adopted by other colleges. In this system provision was made for a large amount of election among subjects regularly taught in the high schools, the unit being a certain time spent on a subject. Free election was first offered by Leland Stanford, Jr., University at its opening in 1891. Later it became the practice for each institution to publish a list of subjects which might be presented for admission, to give each subject a value in points, and to expect the

<sup>3</sup> E. C. Broome. *Historical and Critical Discussion of College Admission Requirements*, p. 284. Columbia University Press, 1902.

student to present so many points. Each institution made such prescriptions as it desired in English, mathematics, modern languages, science, etc. Still later the term "point" was replaced by the word "unit," and the unit came to be defined as a course pursued in the high schools for one academic year either four or five periods a week. The large majority of colleges have come to require fifteen units for entrance.

On the part of the supporters of the elective system it was argued that the main function of the high schools is to prepare for citizenship. This should determine the high-school curricula, and the colleges should set admission requirements which the high-school course will satisfy. "The ideal in admission requirements is a wide range of flexibility, together with a reasonably high standard in each subject. In short, the scope of subjects should be comprehensive but equally strong at all points. This ideal the system of free election is well calculated to attain."<sup>4</sup> Unlimited election allows scattering, purposeless study, and the omission of important fields of knowledge. During his adolescent period the secondary school should afford the pupil "a wide variety of intellectual activities" as a basis for the choice of a trade or profession in agreement with his powers. The function of the school is to furnish general culture as a foundation for future specialization. Differentiation rather than specialization should characterize the work of the preparatory school. Five fields were specified in which the pupil should receive instruction: the vernacular and its literature, the modern languages and their literatures, mathematics, history, and natural sciences.<sup>5</sup>

*Accrediting system.* In earlier days the admission requirements had to be met by examinations. In 1870 the University of Michigan made this announcement: "Whenever the faculty shall be satisfied that the preparatory course in any school is conducted by a sufficient number of competent instructors, and has been brought up fully to the foregoing requirements, the diploma of such schools certifying that the holder has completed the preparatory course and sustained the examination in the same, shall entitle the candidate to be admitted to the university without further examination."<sup>6</sup> The following year it was announced that a committee of the faculty would visit any school on request, for the purpose of reporting its condition to the faculty.

<sup>4</sup> E. C. Broome. *Historical and Critical Discussion of College Admission Requirements*, p. 107. Columbia University Press, 1902.

<sup>5</sup> *Ibid.*

<sup>6</sup> J. L. Henderson. *Admission to College by Certificate*. Teachers College, Columbia University, 1912.

The University of Michigan was at first made up of a central collegiate institution, and several branches which served as preparatory schools. By 1848 these branches were abandoned and the university depended on private and public high schools for the preparation of its students. By 1870 the University of Michigan launched its plan of admission by diploma as a means of encouraging and strengthening the high schools and of giving them an organic relation to the university. It was felt that the university work could not be done earlier than the upper years of the American college, that it must rest on thorough secondary-school work, and that the high schools should be expanded to cover the ground of the Prussian gymnasium. This conception of the boundary line between secondary and university education was widespread at that time, was advocated then and later by President Folwell of the University of Minnesota, reappeared in President Harper's plan for the organization of The University of Chicago, has persisted in the junior-college movement throughout the country, and most recently is being given effect in the new plans at Johns Hopkins and Stanford universities.

The example of the University of Michigan was soon followed in other states, so that admission by certificate has become general in both state and private institutions throughout the West and to some degree has entered into the systems of most Eastern institutions as well. In the modes of inspection and accrediting of schools wide differences in practice have developed. In Michigan, California, Iowa, Missouri, Texas, and Wisconsin control is in the hands of the state university. In New England accrediting is controlled by a board of thirteen representatives of coöperating colleges. Certain institutions have introduced the principle of accrediting in some form under their own individual control. The North Central Association of schools and colleges, and some state and district associations, exercise more or less effective control in their districts. In Indiana, Minnesota, and Florida state boards independent of the university have control of the high schools. In Minnesota the president of the university is a member of the high-school board. This board has been a very effective means of building up and standardizing the high schools in conjunction with an extensive system of state financial aid.

Finally, there has gradually grown up a widespread practice under which a state or private institution in one state accepts the rating given to any particular school by the state university of the state in which the school is located. This practice has become so common that it closely approaches a national system of accrediting, so far as any given university wishes to employ it.

*Tendencies since 1900.* During the nineteenth century there were worked out fairly definite relations between the preparatory schools and the colleges: there was common agreement on the elective principle and in the use of a preparatory time unit as the measure of the work to be accepted for admission; there grew up a general practice of stating admission requirements in definite subjects and in definite quantities for each subject; there remained great differences between the colleges as to the subjects and the quantities of each to be accepted; and there existed all variations from complete examinations in a few subjects to full certification with free election among a large number of subjects. These conditions left room for the greatest diversity of requirements, and there was ground for speaking of uniformity only in view of a few specific requirements such as English and mathematics.

Following extensive inquiries of committees of the National Education Association in the decade of the nineties, the first practical step toward uniform requirements and practice was taken by the formation of the college-entrance examination board by the Association of Colleges and Preparatory Schools of the Middle States and Maryland, in 1899. This board undertook to define the content of admission requirements in the several subjects and to set uniform examinations in different parts of the country. The service performed by this board in the direction of uniformity of examinations and reliability of marking is too well known to require comment here.

In 1915 the board decided to offer, the next year, comprehensive examinations in a number of subjects. The character of these examinations was thus described<sup>7</sup> in the report of the board for 1915:

To be most useful the new comprehensive papers must be adapted:

1. To such variety of school instruction as exists in the several subjects; that is, they must not prescribe methods, but must recognize the general principle that the schools determine how they shall teach a subject and that the college tests results or power.

2. To different stages of training in the subjects in which they are set; that is, they must give boys opportunities to show their power, whether they have had the minimum or the maximum amount of training given in school. For example, the papers in French should be so drawn up as to enable a boy who has had only two years of French to show that he has as much command over the language as can be expected from that amount of training; and they must be similarly useful for the boy who has had three or four years of French.

This led to the adoption by many colleges of the "new plan" of admission first used by Harvard in 1911. This consists of the preliminary acceptance of a candidate on the basis of his secondary-school

<sup>7</sup> College Entrance Examination Board, Annual Report for 1915.

record, and of comprehensive examinations in four subjects. Thus the school certifies to the scope of the student's preparation, and his mental caliber is tested by the examinations.

In 1926 the board gave, for the first time, psychological tests suitable for candidates for admission to colleges, with the understanding that the use of these tests should be optional with the colleges as the board examinations had been.<sup>8</sup>

Meantime individual colleges have continued their efforts to improve the means of selecting promising students. A survey of the announcements of the institutions which are more active in this field shows the following methods being employed:

1. Careful consideration of the quality of scholastic work done by the student in the secondary school. The rating of the student is based either on his performance in examinations, or on his work in his class, or on both.

2. Estimates, by secondary-school principals or teachers, of the probable aptitude of the student for college work, based on personal knowledge of the student's moral and intellectual endowments, his interest and habits, his social and family influences, and so forth.

3. Special tests intended to measure ability or aptitude for college work.

4. Character estimates by persons not engaged in education, such as local professional men or alumni of the college, who are acquainted with the candidate.

5. Indications of aptitude for college work given by the applicant himself in the form of an essay on his objectives in going to college and his reasons for selecting the particular institution, and of self-rating of his intellectual and moral qualities.

For the accommodation of the graduates of public high schools most institutions make some use of the certification plan, usually combined with comprehensive examinations. Yale University, in 1920, instituted a plan whereby "any applicant . . . whose school record shows grades which his school regards as sufficiently high to indicate adequate preparation for college work" may be admitted by passing examinations on the work of his senior school year. It is reported that the students admitted on this plan have made somewhat better records than those admitted on the plan of examining in detail in each subject.

The application of psychological tests to the measurement of college ability is due to the pioneer work of Galton in England in 1882, and of Cattell in this country from 1890 on, to the investigations of Thorndike, and to the work of testing in the army in 1917-1918.

<sup>8</sup> College Entrance Examination Board, Annual Report for 1926.



The army alpha test was given to freshmen at the University of Minnesota in 1917; it became generally available immediately after the armistice and has been widely used. At Columbia and Brown universities tests have been used each year since 1918. The results obtained by the use of these tests in various institutions will be discussed below.

#### THE PROBLEM OF SELECTION AT ENTRANCE

*Purpose of admission requirements.* It is obvious that each institution, in setting up requirements for admission, is seeking to select those who are fitted to do the kind of work which that institution aims to do, and to debar those who are not. It is obvious that terms of admission and methods of making selection will differ in relation to the character and purposes of the institutions.

The aims of each institution are in some measure determined by its own tradition, or by its relation to particular classes or to peculiar sets of conditions in the social organization as a whole. These factors influence the endowed colleges chiefly, while the state universities are more directly beaten upon by popular demands arising from changing social and economic conditions.

The selection of students is of both social and individual concern. Throughout the history of this country there has been a very general tendency to encourage the individual to follow his ambition in the direction of more and higher schooling. Colleges and universities were established in greater numbers than were necessary to accommodate those who could attend them. It was the common practice of the institutions to invite larger and larger attendance. In these circumstances the element of social control was never very prominent. It appeared in the form of requirements for admission which were intended in part to encourage the lower schools to improve their curricula so that a larger number of students might be prepared for the higher institutions. Education was regarded as a process for the product of which there was a constantly and indefinitely growing demand.

The encouragement of high schools and the stimulation of individuals to undertake higher education have had cumulative effects. College enrollments have increased more and more rapidly. The belief of the public in the efficacy of schooling has led to an entirely new situation. College endowments are now no longer adequate for the instruction of those who apply. Most of the older endowed colleges have put new limitations on their enrollments. The state universities, which are regarded as the capstone of the public schools, are able to expend from

their annual support funds, for the instruction of each student, only about half as much as they did fifteen years ago. The percentage of the population enrolled in colleges is now nearly three times as great as it was twenty years ago, but funds for support have not been supplied in proportion. Between 1900 and 1910 the population of the country increased 21 per cent, while the collegiate enrollment increased in the South 34 per cent, in the North and West 109 per cent, and in the country as a whole 85 per cent. From 1910 to 1920, while the population increased 14.9 per cent, collegiate enrollment increased in the South 80 per cent, in the North and West 100 per cent, and in the United States 96 per cent. Collegiate enrollment, therefore, has increased in the last two decades from four times to six and one-half times as fast as the population.<sup>9</sup>

Inevitably growth such as the colleges have experienced in the last two decades will outrun economic production and overburden college administrations, so that the individual student will receive poorer training than he formerly did, and the function of the higher institutions in the extension of human knowledge will suffer from the diversion of resources more and more to elementary instruction. The situation raises more seriously than ever before in our history the question of the kind of instruction to be given, and the question of the capacity of college entrants to make good use of the facilities for higher education. We must approach the study of the selection of students as a matter of general public concern, affecting as it does the efficiency of the college as an important agent of the public welfare. The problem should not be approached either by the student as affecting solely his individual interest or by the administrator as primarily affecting the institutional welfare of the college.

*Aims in higher education.* It is impossible to discuss aims and methods in the selection of students without having clearly in mind the service which the educational institution hopes or is intended to perform. The above historical sketch has given evidence of great changes in the aims of colleges. Starting with the object of conserving traditions and institutions and of training men for the particular service of those institutions (for example, the ministry), the colleges have moved in the direction of becoming agencies for the self-realization of individuals and the fulfillment of the possibilities of human society. It is not the function of the college to shape the intellect, the character, and the lives of its students in accordance with certain traditions or conceptions which the institution holds. This attempt to mold the stu-

<sup>9</sup>*Association of American Universities, Journal of Proceedings and Addresses, 1924: 77.*

dent to its own conceptions places the student in the position of raw material by means of which certain ends are to be served.

The students are not the materials which enter into a college as into a mill. The students are the ends of the work of the college. Remembering that every student is essentially a member of a social race, the only way in which the aims of a college can be stated is in terms of the self-realization of its students. Each student brings to the college certain inherent powers, — physical, social, and intellectual, — determined by his inheritance. These powers have found expression in his activities, including his previous school work. We speak of his preparation for college as the result of his experience and of the impact upon him of his fellow human beings and their activities and products. Each college must determine which boys and girls of the age of about fifteen years and upward have, as the result of inheritance and experience, the powers and attitudes which will enable them to carry successfully, and profit by, the kind of work which that college is intended to do. *This is the problem of selection at entrance.* The college may and must change as it has in the past, but at any given time the college is a product of social experiences and forces which cannot be fitted perfectly to the aims of each individual student. Beyond certain practicable limits the aims of the individual must be satisfied by finding elsewhere a suitable school, apprenticeship, or employment. Within those limits it should be one of the chief aims of the college to adapt itself to the needs of the individual. The extent to which the college can do this and the promptness with which it can adjust itself to new conditions are of the very greatest importance and concern to society.

The first duty of the college is to analyze the character, personality, and intellectual powers of its students. The second is to hold up to its students the most complete and veritable picture possible of the world in which men live, — of human society, human accomplishments, and the functions to be performed by individuals in the social organization. The third is to assist the student in acquiring efficient and correct methods in the study of his situation. In this way the college is the agency by means of which the individual finds the place in life for which his innate character best fits him. This is the problem of selection as a whole. The discussion of the further functions of training for specific objectives belongs elsewhere.

*The secondary school and the college.* It is because our educational system is still very imperfectly coördinated that there exists a difficult problem of admission requirements. We must consider what kind of transition takes place from the high school to the college.

There are essential and very great differences both in objectives and

in the character of the work done. The high school gives training for the common duties of citizenship and for vocations or employments of ordinary kinds; the college gives training for scientific research, for literary and artistic appreciation and production, for the practice of the learned professions, and for leadership in public affairs whether local or national. The high school deals with the more general and simpler facts of history and social organization, and with the elementary mathematical and linguistic tools used in acquiring and communicating knowledge and in the prosecution of mechanical work; the college treats its subject matter with ever-increasing thoroughness until in its advanced instruction it approaches the limits of human knowledge, and with the more and more highly technical and refined tools of knowledge which are necessary for research into the unknown. The high school conveys the subject matter of its studies chiefly as information to be accepted; the college presents its materials as the objects of critical examination, as facts to be explained, as phenomena the causes of which are to be discovered, as actions or policies the reasons and significance of which are to be determined.

The high school requires minds ready to grasp a certain relatively simple body of knowledge and ready to use the simpler tools of learning. The college requires minds capable of growth and development beyond the high-school level, — minds that will be able to deal with successively more and more intricate, profound, and difficult subject matter, to carry investigation and analysis deeper and deeper and with increasing clearness of insight and appreciation of the causes and forces involved. It is the higher order of intellectual ability, the plasticity of mind, the freshness of interest, the power of going on which chiefly characterizes the successful college student. It is the possession of these qualities, too, which chiefly characterizes the most valuable citizen, the leader in educational, industrial and public affairs, the great doctor, lawyer, engineer, scientific investigator, inventor, or statesman.

Under the elective system in both schools and colleges some overlapping of subject matter occurs, but this in no way invalidates the essential distinctions above drawn. The college sets a more rapid pace in these subjects and expects its students to carry other more difficult subjects, because it assumes that it should and does receive from the high schools students who are capable of the progressive performance above described. It is for the training of this type of students that the college exists. Schools organized to train students who belong on the intellectual level of the high school are not colleges. If such schools should be organized under the same administration as colleges, their student personnel would make them of necessity departments essen-

tially different from the colleges. Some universities maintain sub-collegiate schools of agriculture and might maintain similar schools for other trades. The question of public policy regarding the establishment of such other schools cannot be discussed here, but it has a bearing on the practical questions regarding student selection.

The high schools have a serious problem arising from their dual rôle. They must give the occupational training best suited to those who are not going to college, and they must do whatever is necessary in preparation of others for college work. The service of the high school toward those who will go on to college is to prepare them to begin work on the college level. The colleges have made no scientific study to determine what specific preparation is essential for college students. When this is done it may be found that the dual burden on the high schools will be somewhat lightened.

The point of view which sees a very material difference between the first two years and the last two years of the college course has been cited above with the writer's approval. This view is not inconsistent with the distinctions between high school and college above noted. At the college age it is none too often to expect a serious and careful taking of stock at each two years. Thoughtful high-school men are making a similar distinction between the junior high school and the senior high school, and are insisting on a taking of stock at that point. At the close of the adolescent period it is highly appropriate that those who go on beyond the public high school should enter upon a more rapid and intensive stage of intellectual training. In this phase those who are to enter vocations of moderate difficulty should be trained directly for such vocations, while those who aspire to the highest and most difficult functions in society should enter upon a suitable course, namely, college training.

### THE BENEFITS OF SELECTION

The necessity for some degree of selection at entrance to college because of economic and other limitations which appeal both to the institution and to the general public has never been questioned; nor has the benefit of selection to the institution in its intellectual interests ever been doubted. It has generally been recognized also that the exclusion from college of those who are in reality least capable proves beneficial to the students who are admitted. The advantage which has scarcely been recognized is that which the selection of students bestows on those who are rejected.

Parents expect the public schools to make educated people of their

children. A boy whose innate mental and physical powers fit him for a mechanical trade is educated when he is properly prepared for a trade that he likes, is provided with a certain fund of general information, and has cultivated a liking for reading or conversation which will keep him informed on the affairs of the day. Such a boy is not educated by being sent to a school or college where the kind of work done is beyond the capacity of his mental equipment. The parent has a right to expect public education for his son, but someone must exercise judgment as to what kind of education is fitting. The present method of allowing the boy to make a wrong choice of school and then "flunking" him out is not beneficial. This kind of selection comes too late to help him prepare for a suitable vocation.

Students who have had low standings in the secondary school come into college under great handicaps. They often have a difficult and harrowing experience. Failing, they return home discouraged and disheartened, and are less able than before to make a success of a suitable vocation, if they can find it. The duty of high school and college is to give these young people advice in time to save them such unfortunate experience, to direct them into the kind of school suited to them or into apprenticeship in some line where they may succeed. The boy who is refused admission after wise examination of his ability and interests is certainly no less benefited by a system of student selection than is the one who is admitted.

#### VALUES OF CRITERIA AT PRESENT EMPLOYED

We are dealing with the problem of adjustment between students and colleges above the level of typical American secondary education. Each student in his inherent qualities differs from every other student. Each student's aims are or should be determined by his aptitudes and interests. His satisfaction is to be secured through training for the work which he is best fitted to do. The problem of selection at entrance is the problem of discovering the aptitudes of candidates. This is a job of personal analysis. The purpose of admission requirements is to find out whether a given student ought to be advised to undertake the kind of training which the particular college has to offer. How well do present criteria effect the analysis of this situation?

All forms of criteria thus far used may be classified as content tests, tests of intellectual ability or capacity, and information in regard to character. The content tests include the traditional examinations for admission and admission by certificate as practiced by the larger number of colleges.

Before discussing which of these is preferable let us note the more fundamental question: To what extent does information regarding the content of previous studies offer a reliable basis for selection? Obviously previous studies are important in so far as the student is to continue the same studies. Examples of continuation studies are languages and mathematics. There is also a relation between mathematics and the physical sciences, between geography and history, etc. This principle of examination in continuation studies was fairly applicable in the early history of higher education in this country, but since the development of the elective system it has very much less significance.

Aside from continuation studies there is no conclusive evidence as to the extent to which secondary studies are a necessary foundation for college work. It will be generally admitted that, in so far as preparatory studies indicate serious work and capacity for work, they are good indicators of college ability. This was essentially the ground on which Greek, Latin, and mathematics stood for so long, namely, that they were usually better taught and stood for more serious work than the newer studies. Probably every institution has admitted special students to candidacy for degrees after they have shown their ability in one or more years of college work. Among the Federal Board students since the war have occurred scattering cases of this sort amounting to a considerable aggregate. In exceptional cases the special student has had no secondary-school subjects whatever and still succeeds in college work. When the matter is submitted to experimental study, as it should be, it may appear that the importance of secondary-school study bears some relation (perhaps an inverse relation) to the capacity of the individual. Certain it is that nearly every institution which has limited its enrollment in the last decade has introduced other factors into its admission requirements, presumably because the content element was believed to be insufficient or not wholly reliable.

The relative value of examinations and certification has been widely discussed.<sup>10</sup> The difficulty about making a comparison is that when examinations are used, the applicants who fail are rejected and there is no opportunity to observe their performance as students. The institutions can observe how many unsatisfactory students are admitted, but not how many satisfactory ones have been rejected.

<sup>10</sup> J. L. Henderson. Admission to College by Certificate. Teachers College, Columbia University, 1912; also, Report of Committee G on the Selection, Retention, and Promotion of Undergraduates. *American Association of University Professors. Bulletin*, 12 : 373-481, October, 1926.

When the law or public opinion in a state requires the university to admit all graduates of high schools, this makes the lower school the judge of the fitness of a student for the work of the higher school. In an integrated public school system a common authority determines the conditions of promotion from grade to grade and on up through the high school. The state university is not a part of such an integrated system under a common higher authority, educationally competent. In several states the university faculty is recognized as that competent authority with respect to this one matter of promotion from the high schools to the university.

In other cases the universities and colleges are expected to look to lower schools to decide what students are capable of profiting by the work of the higher institutions. This is neither logical nor intelligent. The larger and better-equipped high schools have developed vocational training and guidance for those who wish to enter occupations for which the high schools offer adequate training. For the vocational guidance of those who wish to enter occupations or professions for which college training is prerequisite, the high schools generally have developed no special knowledge or methods.<sup>11</sup> The high schools themselves find great difficulty in exercising selection or maintaining standards because of the compulsory-education laws. These laws require the pupils to be in school approximately to the age for graduation of the brighter pupils. Since nearly every parent regards his child as normal and of at least average intelligence, the strongest pressure is brought to bear on the principal to graduate all pupils. High-school teachers frequently complain that standards are broken down and their best efforts in teaching rendered futile because of compulsory attendance and parental pressure. Principals freely declare that they graduate, as they should, many pupils who are not capable of doing college work; but many principals, when asked to rate their graduates with reference to their probable success in college, estimate that nearly all of them will do college work above the average.

The selection of students for higher institutions is foreign to the main purpose of the high school and is an impossible task in view of the conditions created by the compulsory-education laws, the popular belief in higher education, and the pressure of parents. The selection of those who are capable of undertaking the more difficult tasks and assuming the greater responsibilities in a complex industrial and political society, or of carrying through the college or professional training necessary for the performance of those functions, should be

<sup>11</sup> Charles W. Boardman. *The Work of the Committee of Seven. Educational Record*, 7, Supplement 2 : 21-32, July, 1926.



in the hands of competent persons engaged in giving the training for those functions. When high-school graduation is the basis for admission, selection must be carried out after the students have entered college. To make the selection at entrance would be advantageous to everyone concerned. The chief question for careful study has to do with the accuracy of the prediction involved in the standards and methods used in selection.

One of the other criteria relied upon is the recommendation by the principal of the secondary school. This has been part of Michigan's certification plan from the beginning, has been followed by some of the state universities, and is part of the new plan of admission in many eastern institutions. Letters from twelve of the institutions in which this element holds the most prominent place reveal the fact that in no case has a systematic study been made of the validity of the principals' recommendations. There is nothing to show to what extent the principal's estimate agrees with the performance of the student in college work.

A study made at Brown University<sup>12</sup> led to a very adverse judgment as to the validity of these estimates. An independent study at the University of Minnesota has given somewhat less discouraging results and is being continued in the hope of finding real value in estimates by teachers and principals.

Of the validity of other data gathered at entrance, positive evidence is lacking. In case of endowed institutions having peculiar atmosphere and traditions or appealing to special classes in society, letters from alumni would presumably be of considerable value. Rating scales, whether used by teachers or by the student, are being tried, but no great confidence in them has been established as yet. The fact that their validity is being systematically studied is ground for a hospitable attitude toward them. Letters or essays written by the student would certainly have some value as a minor auxiliary indication of fitness.

The two measures which have proved of real significance are the record made by the student in his secondary studies and the record made in psychological tests.

*Record in secondary studies.* This is the best single criterion of the ability of a student for college work. The significant fact about a scholastic record is not that the student has graduated or that he has secured certain marks, but that he has attained a certain rank among his fellows. The boy or girl who during four years has stood near the head of a class of any considerable size has thereby given indisputable proof of a certain aptitude for school work. This can be compared with the

<sup>12</sup> Andrew Hamilton MacPhail. *The Intelligence of College Students*. Warwick & York, Inc., 1924.

performance of a graduate from another school. Marks cannot be so compared, because of the different meaning attached to the same marks by different teachers. The importance of the rank of the student in his graduating class is widely recognized. Many colleges require to know that rank for use in passing upon applicants. In our own studies it was early apparent that the use of the scholastic rank is advantageous, and, further, that much more accurate judgments regarding college aptitude can be made by using individual rankings than by using quartiles or other fractions of the class. For convenience of calculation and records the individual rankings may best be converted into percentile rankings.

Of 1088 freshman studied at Minnesota in the three years 1923–1925 only 2.23 per cent of those who entered the college from the lowest quartile of their high-school classes attained a satisfactory standing.

The reason why the secondary-school record of a student is a good measure of his scholastic aptitude is that the performance which gains him his rating is due in part to those qualities other than intellectual — industry, zeal, determination, and others which will prove important in college work also.

*Psychological tests.* These tests have been very widely used since 1918, and college authorities have accumulated a deal of experience and a great volume of data. It is no longer necessary to discuss the general significance or validity of psychological tests.<sup>13</sup> In general it is true that students who have high scores in these tests are more likely to make high grades in college than those with low scores. It is true also that those with low test scores seldom make high grades in college, and that most of those with very low scores fall below passing. The degree of correlation between test results and college performance depends on a number of factors, of which may be named the skill with which the tests are framed, the care with which the tests are revised from year to year on the basis of the correlation shown, the proportion of the students who put serious effort into their college studies, the uniformity of standards in the college, the validity of instructors' marks, and any conditions which may affect normal performance and the judgment of performance either in the tests or in college work. For example, if a large number of students are careless or scorn the tests, the correlations will fall. In college work the introduction of objective

<sup>13</sup> Andrew Hamilton MacPhail. *The Intelligence of College Students*. Warwick & York, Inc., 1924.

L. M. Terman. *Report of a Stanford University Committee upon the Use of Psychological Tests as Admission Tests*. Stanford University, 1923.

Benjamin D. Wood. *Measurement in Higher Education*. World Book Company, 1923.

examinations or other methods which eliminate subjective judgments and the personal equation tends to increase the degree of correlation. If the student is ill at the time of taking the test, the score may be far from a true measure of his ability.

When the tests have been intelligently prepared and carefully revised with reference to the college performance of those tested, the results in general have been such as to justify our calling these tests college-ability tests. The value of these tests is that they give the administrator knowledge regarding the intellectual ability of the student in relation to the known demands of various types of college work. Their usefulness is not restricted to the field of admission requirements. They are of great service for guidance after admission, and should be used also in a positive way for the guidance of those who are not admitted.

As admission examinations the college-ability tests have certain limitations which have prevented any institution from using them as the sole ground for deciding that one student should be admitted and another rejected. Students with relatively low scores carry a surprising number of credits with A and B grades.<sup>14</sup> A surprising number of students in the lowest decile on the tests gain satisfactory average standings in their college work.<sup>15</sup> A score below 60 in the Thorndike tests is considered as indicating inability to do college work at Columbia. At Brown University 40 per cent of those receiving a Thorndike score below 60 secured an academic average above 70, 23 per cent secured an academic average above 75, and 3.8 per cent made average grades above 80.<sup>16</sup> In Stanford University, of the students who received a Thorndike score below 60 at entrance, 25 per cent secured an average academic standing of C, four out of 63 students attaining C plus and one B minus. Of the students whose Thorndike score was below 50, 25 per cent secured an average academic standing of C.<sup>17</sup>

The sponsors of psychological tests have been careful not to claim that the tests will correctly predict the performance of any particular individual.

Any claims that aptitude tests now in use really *measure* "general intelligence" or "general ability" may or may not be substantiated. It has, however, been very generally established that high scores in such tests usually indicate ability to do a high order of scholastic work. The term "scholastic aptitude"

<sup>14</sup> Benjamin D. Wood. *Measurement in Higher Education*, Table 12. World Book Company, 1923.

<sup>15</sup> Andrew Hamilton MacPhail. *The Intelligence of College Students*, pp. 111-112. Warwick & York, Inc., 1924.

<sup>16</sup> *Ibid.* p. 95.

<sup>17</sup> L. M. Terman, *op. cit.*

makes no stronger claim for such tests than that there is a tendency for individual differences in scores in these tests to be associated positively with individual differences in subsequent academic attainment.

The assertion of a general positive relationship obtaining, on the whole, between aptitude tests and subsequent academic standing, carries with it no certainty of prediction of inevitable subsequent success of a particular individual with a high score, or of inevitable academic disaster in the case of a specific person with a low test score.<sup>18</sup>

Psychological tests for specific purposes which are now developing may aid in making more complete the personal analysis above referred to.

*Combined ratings based on several kinds of data.* Admission requirements have usually been matters of opinion and academic discussion, without systematic checking with the performance of all persons examined. When only those who have met certain entrance criteria are admitted, we cannot have an adequate measure of the validity of these criteria, because we have no measure of the performance of those rejected.

The operation of admission requirements is necessarily an individual matter. One student is admitted, another rejected. If the criteria used are unsafe for prediction of college ability, the result may be tragic for either student. It is most important that those who are responsible for making decisions of such moment to thousands of individuals every year should be furnished with the most accurate possible instruments for measurement. The results of applying any set of tests for college ability should be reported in terms of the performance of individual students in college work.

A study of the class which entered the college of liberal arts at the University of Minnesota in 1917 showed that the combination of two or more types of measure greatly increased the accuracy of prediction regarding college ability.<sup>19</sup>

The two most important measures to be used in combination are the secondary-school record and the psychological tests. Thorndike found a correlation of only 0.26 (Pearson coefficient) between secondary-school marks and scholarship scores in Columbia College, while Thorndike tests gave a coefficient of 0.67. As above pointed out, high-school marks are unreliable for this purpose, and only the rank of the student in his class should be used. When so used at Minnesota the high-school record yields a correlation coefficient of 0.63. A com-

<sup>18</sup> College Entrance Examination Board, Annual Report of the Secretary for 1926: 6.

<sup>19</sup> J. B. Johnston. Predicting Success in College at the Time of Entrance. *School and Society*, 23:82-88, January 16, 1926.

bination of high-school and test records gave correlations ranging from 0.68 to 0.72.<sup>20</sup>

The advantage of combining the two measures is found in the fact that an individual frequently has a test rank and a high-school rank that are widely different. Divergences such as the following are not uncommon: percentile rank 3 in test, with 85 in high school; 83 with 8; 54 with 1; 53 with 97; 15 with 94; and so on. In such cases either rank may be the higher. A boy with low native endowment may make a fair or good record in high school through industry, and then find the college work really beyond his powers; or a brilliant chap, after loafing in high school, may do good work in college. The two ratings supplement each other, and consideration of both enables us to avoid many errors in prediction which would result from dependence on one measure alone.

Studies in the prediction of college ability made at Minnesota, so far as they bear on admission requirements, have had the sole purpose of finding measures that possessed a sufficiently high degree of reliability so that they could be used as entrance criteria without doing injustice to individuals.

These studies have special significance because they deal with a self-selected group of the graduates of well-organized and efficient city high schools. The degree of selection taking place between these high schools and the college in question is shown in Table I on the following page.

The selection in 1925 was a trifle better for the men and a trifle lower for the women.

This table shows that girls got better grades than boys in the high school; that more boys came to college from the lowest ranks than from the highest; but that both the boys and the girls who came to college represented a definite, although slight, selection from the upper ranks.

In order to prepare the combined ratings, data are collected first from the secondary schools giving accurately the rank of each student in his graduating class, based on the average marks for the high-school course. The principal states the size of the class and the rank of each student, the highest student being numbered 1. These ranks are then converted into percentile ranks to facilitate comparison of students coming from schools differing in size. The performance of all freshmen in the college-ability test is also expressed in percentile ranks. These two percentile ranks are then simply averaged to secure

<sup>20</sup> J. B. Johnston. Predicting Success or Failure in College at the Time of Entrance. *School and Society*, 19 : 772-776; 20 : 27-32, June 28-July 5, 1924.

TABLE I. VOLUNTARY SELECTION

Occurring between the high schools of Minneapolis and St. Paul and the College of Science, Literature, and the Arts of the University of Minnesota during the years 1922, 1923, 1924.

| HIGH SCHOOL<br>PERCENTILE<br>RANK | MEN                |                               |          | WOMEN              |                               |          |
|-----------------------------------|--------------------|-------------------------------|----------|--------------------|-------------------------------|----------|
|                                   | Total<br>Graduates | Number<br>entering<br>College | Per Cent | Total<br>Graduates | Number<br>entering<br>College | Per Cent |
| 91-100 . . . .                    | 156                | 67                            | 42.9     | 380                | 129                           | 34.0     |
| 81-90 . . . .                     | 174                | 71                            | 40.8     | 361                | 85                            | 23.6     |
| 71-80 . . . .                     | 189                | 83                            | 44.0     | 341                | 70                            | 20.2     |
| 61-70 . . . .                     | 228                | 89                            | 39.0     | 302                | 64                            | 21.2     |
| 51-60 . . . .                     | 221                | 68                            | 30.8     | 305                | 61                            | 20.0     |
| 41-50 . . . .                     | 244                | 69                            | 29.0     | 283                | 53                            | 18.7     |
| 31-40 . . . .                     | 253                | 81                            | 32.0     | 282                | 44                            | 16.0     |
| 21-30 . . . .                     | 296                | 95                            | 32.0     | 240                | 35                            | 14.6     |
| 11-20 . . . .                     | 290                | 80                            | 28.0     | 237                | 36                            | 15.0     |
| 1-10 . . . .                      | 292                | 73                            | 27.0     | 228                | 37                            | 16.3     |
|                                   | 2343               | 776                           | Av 33.+  | 2961               | 614                           | Av. 20.7 |

TABLE II. MEN

| COMBINED<br>PERCENTILE<br>RATINGS | SCHOLARSHIP IN HONOR-POINT RATIOS |                    |                  |                  |                    |                    |                    |                    |           |
|-----------------------------------|-----------------------------------|--------------------|------------------|------------------|--------------------|--------------------|--------------------|--------------------|-----------|
|                                   | -1.00<br>-.51<br>F-               | -.50<br>-.01<br>F+ | 0.0<br>.49<br>D- | .50<br>.99<br>D+ | 1.00<br>1.49<br>C- | 1.50<br>1.99<br>C+ | 2.00<br>2.49<br>B- | 2.50<br>2.99<br>B+ | 3.00<br>A |
| 96-100 . . .                      |                                   |                    |                  |                  |                    | 6                  | 9                  | 2                  |           |
| 91-95 . . . .                     |                                   |                    | 2                | 1                | 6                  | 8                  | 4                  | 2                  |           |
| 86-90 . . . .                     |                                   |                    | 5                | 4                | 10                 | 8                  | 5                  | 1                  |           |
| 81-85 . . . .                     |                                   |                    | 4                | 10               | 12                 | 5                  | 3                  |                    |           |
| 76-80 . . . .                     |                                   |                    | 4                | 8                | 8                  | 1                  | 1                  |                    |           |
| 71-75 . . . .                     | 2                                 |                    | 1                | 5                | 12                 | 1                  | 2                  |                    |           |
| 66-70 . . . .                     |                                   | 1                  | 4                | 15               | 6                  | 4                  | 1                  | 1                  |           |
| 61-65 . . . .                     | 1                                 |                    | 8                | 12               | 6                  | 3                  | 2                  |                    |           |
| 56-60 . . . .                     | 4                                 | 3                  | 6                | 11               | 8                  | 3                  |                    |                    |           |
| 51-55 . . . .                     | 3                                 | 8                  | 10               | 13               | 4                  |                    |                    |                    |           |
| 46-50 . . . .                     | 5                                 | 3                  | 12               | 12               | 4                  | 2                  |                    |                    |           |
| 41-45 . . . .                     | 4                                 | 3                  | 14               | 8                | 6                  |                    |                    |                    |           |
| 36-40 . . . .                     | 9                                 | 7                  | 11               | 10               | 5                  |                    |                    |                    |           |
| 31-35 . . . .                     | 8                                 | 5                  | 10               | 8                | 1                  |                    |                    |                    |           |
| 26-30 . . . .                     | 10                                | 6                  | 12               | 7                |                    |                    |                    |                    |           |
| 21-25 . . . .                     | 12                                | 2                  | 10               | 2                | 1                  |                    |                    |                    |           |
| 16-20 . . . .                     | 9                                 | 4                  | 8                | 1                | 1                  |                    |                    |                    |           |
| 11-15 . . . .                     | 9                                 | 2                  | 1                | 2                |                    |                    |                    |                    |           |
| 6-10 . . . .                      | 6                                 | 2                  | 2                |                  |                    |                    |                    |                    |           |
| 1-5 . . . .                       | 4                                 | 1                  |                  |                  |                    |                    |                    |                    |           |

a combined rating. The coefficients of correlation (from 0.68 to 0.72) between these combined ratings and the college performance of the same students are nearly equal to the correlations between college marks for successive terms, and therefore are as high as can be expected.

Correlation coefficients, however, do not tell whether given entrance criteria will do justice to William Brown and John Smith. This can be told only by comparing the predictive rating of individual students with their performance in college work.

TABLE III. WOMEN

| COMBINED<br>PERCENTILE<br>RATINGS | SCHOLARSHIP IN HONOR-POINT RATIOS |                    |                  |                  |                    |                    |                    |                    |           |
|-----------------------------------|-----------------------------------|--------------------|------------------|------------------|--------------------|--------------------|--------------------|--------------------|-----------|
|                                   | -1.00<br>-.51<br>F-               | -.50<br>-.01<br>F+ | 0.0<br>.49<br>D- | .50<br>.99<br>D+ | 1.00<br>1.49<br>C- | 1.50<br>1.99<br>C+ | 2.00<br>2.49<br>B- | 2.50<br>2.99<br>B+ | 3.00<br>A |
|                                   |                                   |                    |                  |                  |                    |                    |                    |                    |           |
| 96-100 . . . .                    |                                   |                    |                  |                  | 2                  | 4                  | 9                  | 3                  | 1         |
| 91-95 . . . .                     |                                   |                    |                  | 1                | 8                  | 9                  | 11                 | 7                  |           |
| 86-90 . . . .                     |                                   |                    |                  | 2                | 8                  | 12                 | 6                  | 1                  |           |
| 81-85 . . . .                     |                                   |                    |                  | 1                | 8                  | 8                  | 8                  | 1                  |           |
| 76-80 . . . .                     | 1                                 |                    | 6                | 5                | 17                 | 9                  | 5                  | 1                  |           |
| 71-75 . . . .                     |                                   | 2                  | 1                | 4                | 10                 | 6                  | 4                  |                    |           |
| 66-70 . . . .                     | 2                                 | 2                  | 1                | 8                | 14                 | 5                  | 1                  |                    |           |
| 61-65 . . . .                     | 2                                 |                    | 6                | 15               | 12                 | 5                  |                    |                    |           |
| 56-60 . . . .                     | 2                                 | 3                  | 6                | 10               | 13                 | 2                  |                    |                    |           |
| 51-55 . . . .                     | 1                                 |                    | 13               | 12               | 9                  | 4                  |                    |                    |           |
| 46-50 . . . .                     |                                   | 1                  | 2                | 14               | 6                  | 4                  |                    |                    |           |
| 41-45 . . . .                     | 3                                 | 2                  | 7                | 13               | 6                  | 2                  | 1                  |                    |           |
| 36-40 . . . .                     | 2                                 | 5                  | 9                | 13               | 6                  |                    |                    |                    |           |
| 31-35 . . . .                     | 7                                 | 4                  | 7                | 9                | 8                  |                    |                    |                    |           |
| 26-30 . . . .                     | 2                                 | 1                  | 9                | 4                | 1                  |                    |                    |                    |           |
| 21-25 . . . .                     | 5                                 |                    | 9                | 4                |                    |                    |                    |                    |           |
| 16-20 . . . .                     | 2                                 | 2                  | 9                | 5                |                    |                    |                    |                    |           |
| 11-15 . . . .                     | 5                                 |                    | 3                | 3                |                    |                    |                    |                    |           |
| 6-10 . . . .                      | 7                                 | 1                  | 1                | 1                |                    |                    |                    |                    |           |
| 1-5 . . . .                       | 1                                 |                    | 2                | 2                |                    |                    |                    |                    |           |

Tables II and III give combined ratings compared with college scholarship, for students entering in 1923, 1924, and 1925 (scholarship record of two years for the 1923 group and of one year for the 1924 and 1925 groups). Correlations are shown for men and women separately because higher grades are given to women both in high school and in college. The honor points carried by the letter grades are as follows: A, 3; B, 2; C, 1; D, none; F, -1 per credit hour. The horizontal line in these tables marks the threshold of college ability; the vertical line, the threshold of satisfactory college work. The verti-

cal line is fixed in any institution by faculty enactment. The threshold of ability is an arbitrary line which may be fixed at any level to correspond to the standards of the given college. In these tables it was located, after trial, in such a way as to set apart the largest possible number of persons unfitted for college work, while involving the smallest possible number who would prove themselves to be so fitted.

The actual predictions made at the time of entrance at Minnesota in the fall quarters of 1923, 1924, and 1925 pointed out 208 individuals among 1088 students, or 19 per cent, who could not be expected to secure in the freshman and sophomore years the average of C, which is required for promotion. In two years scholastic record for the 1923 group and one year for the 1924 and 1925 groups, three men and no women secured an average of C. If the college had denied admission to the 208 individuals, it would have done injustice to three men, using the scholastic average required for promotion as the basis of judgment. By admitting all these applicants the college entailed upon 205 students a large amount of effort and expense as well as the pain of failure, in order to prove what these ratings enabled the college to predict. In five years no student having similar low ratings has attained an average standing higher than C, the lowest average considered satisfactory.

The accuracy of the predictions seems to hold not only for the first year or two but for the whole four years of the college course. Figs. 1 and 2 (pages 433 and 434) show the performance of the group which entered in 1921 compared with the combined ratings. Note that there is a high correlation between the predictive ratings and the length of residence, and that no student graduated or made four years' progress in a professional course whose rating was below the threshold of ability.

It is obvious from the tables and figures that a large number of persons who appear in the upper left quadrant are either intellectually unfitted for college work or have handicaps (insurmountable under present conditions) due to social relations, attitudes, habits of study, etc. This group of students should be one of the chief objects of interest and effort in any institution. Faculty advisers should assist the intellectually capable to overcome their handicaps. Faculty and parents should coöperate to find more suitable schools or employment for those who are clearly out of place. In the present connection the question rises, How far can methods of prediction help to analyze this group into its types?

Assistance in identifying some of the unfit appearing in the upper left quadrant of Tables II and III is found in the significance of (1) very



| Combined Ratings | Scholarship, Four Years |     |     |     |     |      |      |    |   |
|------------------|-------------------------|-----|-----|-----|-----|------|------|----|---|
|                  | F-                      | F+  | D-  | D+  | C-  | C+   | B-   | B+ | A |
| 96 - 100         |                         |     |     |     |     |      | •    | •  |   |
| 91 - 95          |                         |     |     |     |     | •    | •    | •• |   |
| 86 - 90          |                         |     |     | ⊙   | ⊙ • | ○    | •    |    |   |
| 81 - 85          |                         |     |     |     | ⊙ • | ○○ • | ○○   |    |   |
| 76 - 80          |                         |     |     | †   | ○   | ⊙ •  | ○    | •  |   |
| 71 - 75          |                         |     |     |     | ••• |      | ⊙ •• |    |   |
| 66 - 70          | ⊙                       | ⊙   | ⊙⊙  | ○○  | ⊙○○ |      | •••  |    |   |
| 61 - 65          | ⊙ ○                     |     | ○   | ⊙○○ | ••• | •    |      |    |   |
| 56 - 60          | ⊙                       | ⊙   | ⊙⊙  | ⊙⊙⊙ | ••• |      |      |    |   |
| 51 - 55          |                         |     | ○   | ○○○ | ⊙○○ | •    | •    |    |   |
| 46 - 50          | ⊙                       | ⊙⊙  | ○○  | ○○○ | ⊙○○ |      | •    |    |   |
| 41 - 45          |                         | ⊙⊙⊙ | ⊙○○ | ⊙⊙⊙ | ••• |      |      |    |   |
| 36 - 40          | ⊙                       |     | ⊙   | ⊙⊙⊙ | ○○  |      | •    |    |   |
| 31 - 35          | ⊙ ○                     | ⊙ ⊙ | ⊙ ○ | ⊙⊙⊙ | ○   |      |      |    |   |
| 26 - 30          | ⊙ ⊙                     | ⊙   | ⊙⊙⊙ | ⊙○○ | ○   |      |      |    |   |
| 21 - 25          | ⊙ ○                     | ⊙ ⊙ | ⊙ ○ | ⊙ ○ | ○○  |      |      |    |   |
| 16 - 20          | ⊙ ⊙                     | ⊙ ⊙ | ⊙ ○ | ⊙○○ | ○○  |      |      |    |   |
| 11 - 15          | ⊙ ⊙                     | ⊙ ⊙ | ⊙ ○ | ○   |     |      |      |    |   |
| 6 - 10           | ⊙ ○                     | ⊙   |     | ○   |     |      |      |    |   |
| 1 - 5            |                         |     |     |     |     |      |      |    |   |

⊙ Six quarters' residence or less

○ Six to twelve quarters' residence

• Four years' progress or graduated

† Deceased

FIG. 1. Men

low rating in one of the two factors, (2) low ratings in both factors but slightly above the threshold, and (3) a wide spread between the ratings in high-school and tests. The wide spread between the ratings is significant regardless of which is the higher. The boy of low intellectual

| Combined Ratings | Scholarship: Four Years |     |     |     |     |     |     |    |   |
|------------------|-------------------------|-----|-----|-----|-----|-----|-----|----|---|
|                  | F-                      | F+  | D-  | D+  | C-  | C+  | B-  | B+ | A |
| 96-100           |                         |     |     |     |     |     | •   | •• |   |
| 91-95            |                         |     |     |     |     | ••  | •   |    |   |
| 86-90            |                         |     |     | ••  |     | ••• | •   |    |   |
| 81-85            |                         |     |     |     | ••  | ••• | ••  |    |   |
| 76-80            |                         |     | •   | •   | ••• | ••• | ••• |    |   |
| 71-75            |                         |     | •   | ••  | ••• | ••• | •   |    |   |
| 66-70            |                         | †   | •   | ••  | ••• | ••  | •   |    |   |
| 61-65            |                         |     | ••  | ••  | ••• | •   | •   |    |   |
| 56-60            |                         |     | ••  | ••  | ••• | ••  |     |    |   |
| 51-55            |                         | ••  | ••  | ••• | ••• |     |     |    |   |
| 46-50            |                         | ••  | ••• | ••• | ••• |     |     |    |   |
| 41-45            | •                       |     | ••• | ••• | ••  |     |     |    |   |
| 36-40            | •                       | •   | ••• | ••• | ••  |     |     |    |   |
| 31-35            | •                       | •   | ••  | ••  | ••  | •   |     |    |   |
| 26-30            | •                       | ••  | ••• | ••• | •   |     |     |    |   |
| 21-25            |                         | ••• | •   | ••• |     |     |     |    |   |
| 16-20            | •                       | •   | ••• | •   |     |     |     |    |   |
| 11-15            | ••                      |     | •   |     |     |     |     |    |   |
| 6-10             | •                       |     |     |     |     |     |     |    |   |
| 1-5              |                         |     | •   | •   |     |     |     |    |   |

• Six quarters' residence or less

• Six to twelve quarters' residence

• Four years' progress or graduated

† Deceased

FIG. 2. Women

ability who has done well in high school through industry is likely to be unable to carry the higher work of college. The boy of good native endowment who has loafed in high school is likely to continue his habits in college and so fail because of the more rigid standards in col-

lege. The application of these additional devices to a group of 397 freshmen entering in 1925 made it possible to select 71 students above the threshold of ability, of whom only ten secured the scholastic average of C minus.

Help in reaching a decision in doubtful cases may be found in taking into account various data regarding the student's interests and activities, his attitude and ambitions, his social surroundings, etc.

These students with moderate or high ratings who make unsatisfactory records in college offer an important field for further study. How many have irremediable deficiencies, and who are they? How can the college perform its full duty by this group except through extensive and painstaking study, not only by statistical methods but by the personal and sympathetic efforts of faculty counselors?

*Prediction of high attainment.* The attempt to predict which students will secure a C plus average or a B average is much more difficult than to predict which ones will fall below a C minus average, because of the number of students having innate ability who do only mediocre work. From the 1925-1926 group the effort was made to select a list which should include all those who would secure an average of B. Of the whole group, 39 secured this standing; of these, 36 were included in the list in advance. This procedure has a special value in that it makes it possible to call the attention of instructors to students who are worthy of special attention. Also, faculty advisers can investigate cases of disappointing scholarship and discover unfortunate conditions of living or study; this may enable them to remove obstacles or help the student to overcome handicaps and so to attain the success to which his innate endowments entitle him. The practice of notifying parents that their sons or daughters are among those who have the ability to do distinguished work gives promise of helpful coöperation between parents and faculty.

### A PLAN FOR SELECTIVE ADMISSIONS

The older endowed institutions have developed methods of admission more or less adapted to their objectives and necessities. The state universities, with their larger resources and more direct responsibilities, should devise ways of dealing with students who have finished the high school which shall encourage those to enter colleges and professional schools who are better fitted by native endowment and self-discipline, while with equal care and interest, with the coöperation of the high schools, they direct other young people into schools or occupations which best meet their needs. The obligation of the state to provide in-

telligent advice and direction to its youth could be discharged by the steps described below. These proposals are stated here from the point of view of the university, but they could be equally well stated with reference to any other school or vocation. The purpose is to secure an intelligent adjustment between the student and the opportunities for higher education. Selective admission is to be thought of as a phase of educational guidance.

*First step.* With the coöperation of the high school the university should secure the following information about each student applying for entrance: (1) the scholastic rank of the student in his graduating class and the size of the class; (2) an estimate by his teachers or advisers of the degree in which he possesses those qualities or traits of character which contribute to success in college studies; (3) an estimate by the principal of the degree of success which the student may be expected to attain in his college studies. Although such estimates as these may have little validity at present, they ought to be helpful when teachers and principals have developed accuracy in making such judgments. The only way to develop this accuracy is by making trial, detecting errors, and making repeated trial.

*Second step.* In addition to the foregoing the college should secure such information as the following: (4) estimates of the student's intellectual equipment secured through various forms of psychological tests; (5) the chief interests of the student during his high-school years, and his extracurricular activities; (6) the extent to which the student pursued advanced studies in the high school; (7) education and occupation of parents and of brothers and sisters; (8) estimate of the student's special aptitudes and of the adequacy of his training in specific fields, to be secured through aptitude and training tests in each subject in which he is interested; (9) performance in college of previous students from the same school.

The objective sought is the advance measurement of college ability. Ability is constituted of (1) native intellectual endowment, (2) native moral and social traits, and (3) training or experience. As the resultant of the interaction of many factors included under these three heads each prospective freshman appears with a certain ability or aptitude for college work. It is our purpose to discover how he differs from his fellows in each of these factors, in order that we may give him wise guidance. In selecting the kinds of information to be used and in collecting that information certain principles are important. We should (1) tap as many kinds of information as feasible; (2) use two or more sources or channels when possible; (3) seek measures that are as simple as possible, measuring one thing at a time and free from per-

sonal equation or prejudice; (4) make sure that the things measured are important factors in success in college. The measures fulfill their purpose and give proof of their validity when they enable us to predict performance in college by individuals.

There is an advantage to the student in collecting all necessary information some time before college class work begins, and this has a bearing on the justice of the plan of selection employed. If a student is unfitted for college work and that fact can be accurately and surely known before he enters, it is a palpable injustice to withhold the information from him. If a student has a peculiar fitness for music, creative writing, or engineering, and this can be accurately known in advance, it is a very great injustice to allow him to enter upon a medical course without any advice from those whose special business it is to provide educational guidance. General fitness for college can be accurately measured for a certain portion of the present applicants, and something can be done toward discovering special aptitudes. Justice to the youth demands that everything we have be placed at his disposal.

*Third step.* Having these valid measures of college ability, we should go directly to parents and to the public, tell them the facts, and offer them the best advice possible, with full frankness and complete honesty. Always some students have gone to college who were unfitted for college work. The pursuit of college studies is a peculiar kind of work requiring special abilities. There are other occupations and pursuits which require different kinds of ability and which will bring the individual satisfaction and happiness.

In the past the only way to find out whether one was fitted for college work was to try it. In recent years the number of students has become so large that the wastefulness of this process has become appalling. From 30 to 40 per cent of those who enter colleges of liberal arts in state universities find themselves unfitted and become discouraged and leave or are sent home. From careful studies over many years we are now able to tell in advance what each student may reasonably expect to accomplish in college work.

In order to help students to avoid the expense of a trial and the discouragement of failure, we advise those who appear unfitted to carry the usual college studies to enter some occupation for which their experience and high-school work have prepared them. The applicant is not compelled to take this advice. It is given frankly and honestly because it is believed to be to his advantage.

*Fourth step.* After giving this advice let the college announce that, in the case of all those entrants whose college-ability ratings are below

a certain standard, registration will be provisional for the first year. The purpose of this is not only to protect the college but to be of service to the student. Every student provisionally registered would be from the start the subject of careful investigation. He might be assigned to special studies for the purpose of discovering his aptitude for one or another of the professions or occupations. He would be given any special tests that might have diagnostic value. His work in the classroom would be watched, and he would be placed in the hands of an adviser who would inquire into all the conditions and help the student to a decision as to the right course of action,— whether to continue in college or to undertake something for which he seemed better fitted. In most cases the decision reached would be agreeable to the student and greatly to his advantage in comparison with the outcome of the present groping without direction. In time the number of those who insist on having a trial through provisional registration could be limited to those in the upper levels of this group, who might be regarded as border-line cases. Through the operation of this plan the people of a state would learn that where a reliable prediction of college ability is possible it is both more economical to the taxpayer and more advantageous to the student to abide by that prediction.

Essentially this plan is in operation in the author's college, with one additional feature. Those students who are admitted on probation are restricted in their election of studies to survey or informational courses, English, and some vocational work. They are not permitted to elect foreign languages, laboratory-science courses, or any courses which are intended as technical introductions to advanced studies. Under these regulations the time of the student is devoted to work which is likely to have some value to him, and the resources of the college are not wasted in giving him instruction in small classes, in expensive forms of teaching, and in subjects which he will never use. The courses open to these students are of standard college grade. Any student who demonstrates his ability to do satisfactory college work during two quarters or longer is released from probation and is accorded all the privileges of a regular student.

Furthermore, the information called for in the first and second steps mentioned above, so far as it is now available, is collected in the April or May before the student expects to enter college. The college aptitude and English tests were taken in 1928 by 4500, and in 1929 by 10,100 high-school seniors. With this material in hand, the dean of the college sends to every applicant for admission as soon as his admission blank with additional personal information is received (1) an estimate of his prospects for successful college work, (2) his

classification as a candidate for a degree or as a probation student and his assignment to one or other of the four plans for freshman English, and (3) such special advice as is necessary in the individual case.

One indication of the results of this procedure may be found in the following figures for the probation group entering in the fall of 1928. Application was made by 560 students who were so classified. Of these, 313 actually entered after receiving the information from the dean. Of these, at the close of the winter quarter 296 had failed to secure satisfactory college standing, and 165 left college before the spring quarter. The applicants for 1929 are being given this information, which will probably influence them in their decisions.

It must be noted that all advance information about students is kept confidential in the hands of the administration and *no teacher is allowed to know the ratings of his students.*

The net result of the operation of this plan is that the college is not increasing the number of its freshmen and is slowly securing a better selection of students, while those who are unable to do college work are being relieved of the expense and discouragement of failure. More important than this is the education of the public in the principles of selection of those who should go to college.

#### SELECTION AFTER ADMISSION

The selection of students is by no means finished, but only begun, when the freshmen are registered. Reference is made here not to the obvious selection through failure but to the processes by which failure can be avoided if native ability is present,— by which students may be enabled to live up to their native ability and get from their college course all that it has for them,— and the conditions or arrangements which will enable each student to find the place in the world in which he can work with the greatest success and satisfaction. To discuss these processes and conditions would mean to encroach upon the subject matter of other chapters of this book. This involves the whole fields of curriculum, of methods of instruction, of faculty advice and guidance. The continued selection of students, considered as a phase of educational guidance, demands the use of such devices as sectioning classes on the basis of ability, academic privileges to the student of high performance, ability lists, honor lists, and scholarships and academic honors. An important purpose of all selection and guidance is, on the one hand, to avoid confronting the student with tasks which he cannot perform, and, on the other hand, to encourage him to bring his performance up to the level of his innate ability.

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## CHAPTER XIV

### THE COLLEGE CURRICULUM

By ERNEST H. WILKINS, President of Oberlin College

#### PURPOSE OF THE COLLEGE

The central purpose of the college is the training of the minds of its students. This training is twofold: it involves, first, the acquisition of knowledge by the student, and, second, training in the processes of the acquisition and the use of knowledge.

The modern man needs two types of knowledge. If he is to be a sympathetic, broad-minded, and generally intelligent member of society, he should have some measure of significant and ordered knowledge of each of the main fields of human interest. The late President Ernest D. Burton said:

A college ought to enable all its students to place themselves in the world, to recognize where they are. It ought to help each student to acquire such a knowledge of the physical universe, of the history of the race, of the structure of society, and of the nature of the individual that, taking his stand at the center of his own being, he may have a sense of where he is.<sup>1</sup>

And if the modern man is to render efficient individual service in the maintenance and development of human society, he must have a large measure of significant and ordered knowledge within some special field. College education should, therefore, be in part general, in part special,—in part extensive, in part intensive.

The vision of this dual need has been the torch which has led the college out of the elective chaos. The two objectives are now recognized in every well-organized curricular system. Nomenclature varies. With reference to the first objective such terms as "general education," "orientation," and "distribution" are in common use; with reference to the second, "special education," the "major study," and "concentration."

Broadly speaking, the process of general education is now chiefly associated with the first two years of the college course, and the proc-

<sup>1</sup> E. D. Burton. *Education in a Democratic World*, pp. 62-63. The University of Chicago Press, 1927.

ess of special education with the last two years. There is, however, no line of absolute division. Relatively intensive work in a single field is often begun before the mid-point of the course, and general education claims as large a share of the last two years as the increasing specialization will allow.

Current American practice, then, divides the college curriculum of the individual student about equally between general and special education, general education being emphasized in the first two years and special education in the last two years. This practice appears to be sound, at least under present conditions.

### FIELDS OF HUMAN INTEREST

General education, as has been said, implies the attainment of some measure of significant and ordered knowledge of each of the main fields of human interest. Let us now consider in some detail the implications of this statement.

A survey of the subjects taught in a typical college will show the existence of three main groups of subjects, and of certain other subjects not included in the main groups. The three main groups are the social sciences; the languages, literatures, and arts; and the physical sciences. The order given is the traditional one; it has, however, no logical propriety. Let us place the physical sciences first, leave out the languages for the time being, and let the term "the arts" include literature as well as the other arts. We shall then have this sequence: the physical sciences; the social sciences; the arts.

This new sequence is at once luminous with evolutionary significance. For the physical sciences deal with that which is *infrahuman* and with the human in so far as it partakes of the *infrahuman*; the social sciences deal with man in the relations forced upon him by the conditions of human society; the arts are the free creation of man's surplus *superphysical* energy.

The physical sciences describe the ever-changing stage upon which the human drama is being played, indicate the basic conditions of man's existence, and give to him a swiftly increasing ability to control the dangers and to utilize the opportunities of the *infrahuman* environment.

The social sciences face the central problem, the problem of human behavior. They describe human behavior in many different fields, studying motives, methods, and results; and they seek ultimately to inform man as to the effects of various kinds of action, in order that he may adapt himself to his companions and with them work

out a way of living which shall yield to each as great a measure of fullness of life as the fundamental conditions of existence will permit.

The arts are of a different order. They are, in the long evolutionary perspective, something new, a social increment. They are themselves means for the enlargement of life,—products and reservoirs of surplus energy, perennially ready, with due mediation, to pour their treasure into new lives.

Such, in broadest outline, are the three main groups of subjects. General education obviously calls for a very considerable amount of study within each of these three groups.

### SUBDIVISIONS OF GROUPS

Let us now examine these groups more closely, considering the subdivisions of each, and taking up, at the appropriate points, the subjects not included in the main groups.

The physical sciences include the two basic physical sciences, physics and chemistry; the two sciences concerned with the observation of the inorganic universe, astronomy and geology; and the biological sciences, which in turn include the infrahuman biological sciences,—botany and zoölogy,—and the main human biological sciences, anatomy and physiology.

Between the physical and social groups are three sciences, geography, hygiene, and psychology, which are in part physical and in part social. Geography deals, to be sure, with the infrahuman earth, but modern geography deals more and more constantly and intently with the earth as the home of human life; geography is indeed becoming human ecology. Hygiene, growing out of the biological sciences, deals with the physical welfare of man as affected primarily by his human environment. Psychology, historically an offshoot of philosophy, is striking root more and more deeply in the soil of physiology.

The social sciences, strictly so called, are three: sociology, the general science of human ways of living; economics, the special science which deals with the socialized provision of the material and the conditions requisite for the preservation and maintenance of life; and political science, the special science which deals with the generalized means of social control.

Closely related to the social sciences are three fields of study of a somewhat different character: history, which is concerned with the entire human past; philosophy, which is concerned, as metaphysics, with the synthetic interpretation of the results of all types of observation and, as ethics, with the very heart of the whole problem of con-

duct; and religion, which, as a field of study, is properly concerned with the whole range of religious experience, belief, and organization, past and present.

Of the arts, literature alone is universally present in the college list of subjects. By the force of tradition, by its very extensiveness, and by its inherent values it affirms itself therein in many local and temporal varieties, which fall into two main groups: the English and American literatures and the foreign literatures. Literature in one of its main aspects is closely allied to the social sciences, for it is the chief medium whereby the phenomena of human experience which seem significant to a human group in one time and place are passed on to human groups in other times and other places.

The other arts — music, architecture, sculpture, and painting — are steadily gaining recognition as rightful fields of college study; for they, though in lesser measure than literature, carry the message of man to man, and they, even more directly than literature, make for the enlargement of life.

### MENTAL TOOLS

There remain certain subjects which, unlike the foregoing, are not primarily (for the college student) fields for the acquisition of knowledge, but are rather means of training in the processes of the acquisition and the use of knowledge. They may be classed, roughly, as general mental tools. They are mathematics, logic, English, and the several foreign languages. Mathematics underlies and makes possible all true science, physical or social; and logic, less formal than of yore, is still its companion. The languages, to the college student, are primarily significant as media of understanding and utterance within the fields both of science and of literature. English is of course of fundamental importance.

The classification of subjects thus suggested may be illustrated as shown in the table on the following page.

Truly the man who would now take all knowledge to be his province faces a task impossible! And yet if the modern man is to be an intelligent dweller in this increasingly complex world, he can hardly afford totally to neglect any one of the physical or physical-social sciences listed above; if he is to live and work effectively and companionably with other men, he can hardly afford totally to neglect any one of the social or physical-social sciences; and if he seeks enlargement of life for himself and for his intimates, he can hardly afford totally to neglect any one of the several arts. If he would understand the human past and present, and fully participate in the life of his own generation,

## TABULAR SURVEY OF THE FIELD OF GENERAL EDUCATION

| PHYSICAL SCIENCES | PHYSICAL-SOCIAL SCIENCES | SOCIAL SCIENCES   | STUDIES CLOSELY RELATED TO THE SOCIAL SCIENCES | ARTS                 | GENERAL MENTAL TOOLS |
|-------------------|--------------------------|-------------------|--|----------------------|----------------------|
| Physics           | Geography                | Sociology         | History  | Literature           | Mathematics          |
| Chemistry         | Hygiene                  | Economics         | Philosophy                                     | English and American | Logic                |
| Astronomy         | Psychology               | Political Science | Meta-physics                                   | Foreign              | English              |
| Geology           |                          |                   | Ethics   |                      | Foreign Language     |
| Botany            |                          |                   | Religion                                       | Music                |                      |
| Zoölogy           |                          |                   |  | Architecture         |                      |
| Anatomy           |                          |                   |  | Sculpture            |                      |
| Physiology        |                          |                   |  | Painting             |                      |

he can hardly neglect history or philosophy or religion. If he is to be effective in thought and speech, he can hardly neglect mathematics or logic or English. If he would avoid provinciality, he can hardly dispense with the knowledge of at least one foreign language.

## HOW TO COMPLETE GENERAL EDUCATION

Only half the college curriculum, or thereabouts, is to be devoted to general education. Obviously the student cannot, within two years' space, gain an adequate measure of even general acquaintance with the vast field of knowledge outlined above. Furthermore, many of the subjects mentioned are such that a good general acquaintance with them may be won by students of pre-college age. Obviously, therefore, the process of general education should begin long before the student comes to college. It is indeed only by the careful interweaving of the high-school curriculum and part of the college curriculum that a satisfactory program of general education can be achieved.

The present inquiry, however, is concerned with the college curriculum. The immediate problem is therefore this: Assuming that each freshman comes to college with the process of general education begun but incomplete, what curricular provision shall be made for the completion of the process?

The natural collegiate method of gaining knowledge in a given field is to take a course or courses in that field. For the purpose of meeting the need in this way every department should offer a single course or a short sequence of courses. These should give some measure of significant and ordered knowledge to the student who takes work in the department solely as a phase of his general education, and has no intention of specializing in the field in question.

#### FOUR PRINCIPLES OF SELECTION

But no student can take or should take anything like the whole set of such courses and course sequences. Clearly, then, a choice must be made. On what principles? Four, I believe: the principle of adaptation to individual need; the principle of major significance; the principle of group representation; and the principle of integration.

The word "curriculum" has no proper modern significance except as designating a course of study created anew for each individual student. No two students bring to college the same background, the same experience, the same achievement in knowledge; and no two students face the same future of work and of leisure. We have no right to do less than to study with the utmost care each individual record and each individual prospect, and to plan the individual curriculum in accordance with the results of that study.

1. *The principle of adaptation to individual need.* Study of the individual record involves study of the whole previous experience of the student,— particularly, of course, his high-school work. Such study should not be limited to ascertainment of the fact that he has taken certain subjects, but should include an estimation of the extent to which each phase of his work has entered into the structure of his mental life. The results of this study should be checked with the list of the several subjects together constituting the field of general education as defined above. In the case of certain subjects, it will appear that the student has already a considerable measure of ordered and significant knowledge of the special field in question. Such subjects may therefore be omitted from the student's college program of general education. In the case of other subjects, it will appear that the student's knowledge is quite negligible, or at least inadequate. In some such cases, but not in all, he should take introductory courses, or short course sequences, in the fields in question; and in the selection of these courses he should be guided by the principles of major significance and of group representation. In other cases he should

gain or develop knowledge through one of the means of integration to be suggested below.

2. *The principle of major significance.* To the principle of adaptation to individual need I shall revert in another connection. I turn now to the principle of major significance.

Are there, among the subjects listed, any of such outstanding significance that they should certainly appear in the typical individual curriculum? My answer is, distinctly, "Yes." And the subjects I should designate, with full recognition of the fact that there is room for difference of opinion in this matter, are hygiene, psychology, logic, and English.

Such knowledge of hygiene as a college course in personal and social hygiene could and should give is fundamentally necessary as one of the means for the building and maintenance of the type of healthy body which alone can stand the exhausting strain of real leadership and alone can pulsate with the magnetism which effective leadership requires. The study of hygiene therefore has a direct part in physical as well as in mental training. Moreover, in the community life which the college graduate is to enter, no single practical contribution is more needed than that of the intelligent initiation and support of measures concerning the hygienic welfare of the community as a whole.

Psychology is, to my mind, the key subject in the modern intellectual advance. Every one of the social sciences, together with philosophy and religion, is realizing more and more closely that it cannot reach valid and significant conclusions with regard to conduct without such understanding of the normal processes of the complete human being as psychology seeks to give. Ultimately no conduct sanction will endure which is not established on psychological foundations. There is, therefore, pressing need for the right building of these foundations. For these reasons I advocate giving to every college student some measure of acquaintance with the psychological field, so that if he shows the least sign of special ability therein he may be encouraged, for the sake of society, to develop that ability. And I make this recommendation with full recognition of the fact, all the more urgently because of the fact, that psychology is still in the stage of groping infancy.

The college student is not only to acquire various types of knowledge; he is to be trained in the methods of acquiring and using knowledge. The main instrument for this training is logic,—logic of the modern inductive type,—case-system logic. We have always said that one of the main tasks of the college is to teach the student how

to think; but we have left the fulfillment of that task to each other, or to chance, on the supposition, apparently, that exposure to the processes of the professorial mind as revealed in the general run of college courses would, through imitation, produce a like logical perfection in student minds. True it is that every college course should have as a definite secondary purpose the training of the student in the methods of thought within a particular field; but we fall short of our duty if we do not make a specific and concentrated effort, while the student is with us, to see and to let him see how he actually reasons, to correct and improve his mental processes just so far as that may be possible, and to develop his mind as nearly as we can to the greatest efficiency of which it is inherently capable. The best means thus far found for the making of such an effort is the course in logic of the type of the Johns Hopkins "Introduction to College Work" and of the Columbia and Chicago "Introduction to Reflective Thinking."

The proposition that the study of English is of major importance should need no argument. Effective utterance, both written and oral, is necessary for effective leadership. Even clarity in thinking is very largely dependent upon the habit of clarity in expression. And the stage of general education in English is not passed, no matter how many courses may have been taken, until the student is able to express clearly and agreeably whatever he has to say. Training in English, like training in logic, should be, so far as possible, individualized. It may not even take course form. It is not likely to be well achieved through the mass production of themes from an artificially created mental vacuum.

Psychology and logic are specifically college subjects; so also is hygiene as here conceived. A few students reach the desired proficiency in English before coming to college. For them, therefore, collegiate training in English is unnecessary.

Since training in respect to the general attitude toward life is a proper and vital part of the college training, it might seem that ethics, which is directly concerned with the development of right attitudes, should be added to the list of subjects of major significance. Every care should indeed be taken that the instruction in ethics be both able and attractive. But the very spirit of modern ethics lies in the substitution of inner for outer sanctions; it would therefore be peculiarly unfortunate that such a course should be handicapped by being put upon a required basis. And no course in ethics, however effective, could carry the full responsibility for ethical training. That respon-



sibility rests upon the entire faculty, and is best to be fulfilled not by indoctrination but by honorable and serviceable living.

The student, then, is to be exempt from further study of subjects adequately covered in the high school, and is presumably to be required to take work in hygiene, psychology, logic, and, in most cases, English. The curricular time available for the rounding out of his general knowledge is not nearly enough, even supposing him to have had a better than average high-school experience, to enable him to take courses in each of the many fields which are as yet quite new or but slightly familiar to him. How, then, shall he choose? The principle next to be invoked is that of group representation.

3. *The principle of group representation.* Inspection of the field of general education as outlined and tabulated above shows at once the existence of certain natural groups of specific subjects. Thus, within the division of physical sciences appear these groups: (1) the basic physical sciences; (2) the sciences concerned with the observation of the inorganic universe; and (3) the biological sciences. Moreover, each of the subjects which stand outside these natural groups is sufficiently relevant to some other subject or subjects to be regarded as forming a group therewith. Thus the whole field, omitting the four subjects of major significance, may be regarded as divisible into the following groups: (1) mathematics, physics, chemistry; (2) astronomy, geology, geography; (3) the biological sciences; (4) sociology, history; (5) economics, political science; (6) philosophy, religion; (7) the literatures; (8) architecture, sculpture, painting, music; and (9) the foreign languages. I do not maintain that this grouping is inevitable; it is intended to serve as a possible typical plan.

General education obviously calls for a considerable amount of study within each of the larger divisions of the field of general education. The specific principle of group representation, a logical development of that obvious general principle, indicates that unless the field has already been adequately represented in the student's high-school work, one course or short course sequence should be taken in each group of a series such as that just suggested.

4. *The principle of integration.* Application of the foregoing principles will still leave some subjects untouched, and will accentuate the need for some synthesis of the several types of knowledge with which the student has become and is becoming acquainted. How shall he gain some significant idea of the fields within which he cannot take a course? How shall he assemble his blocks of disparate information into a significant and ordered whole?

Just here, to my mind, lies the permanent function of the general-survey, or "orientation," courses which have come recently into such wide vogue. Their initial function has been to assert the need for a synthetic view of the whole collegiate field and to provide an opportunity for such a view pending the organization of a plan of general education which would meet the need with some degree of adequacy. They have served hitherto to furnish a general suggestion of what is going on in the physical and social sciences to students in whose experience whole ranges of human interest might otherwise have been left blank. They have been carrying the primary burden in the endeavor to acquaint the student systematically with his universe and with his fellow man. But just in so far as the present disorganized election of courses is superseded by an organized plan of general education the burden upon the general-survey courses will be diminished. With such a plan in operation, however, the general-survey courses will still retain the double purpose of giving the student some touch with the fields in which he has not taken and is not expecting to take courses, and of establishing a synthetic perspective control of the whole territory of intellectual life. They will thus be, in a double sense, courses of integration.

The normal place for courses having this double purpose is at the end of the period devoted primarily to general education, that is, in the sophomore year. There should be three such courses, running in sequence throughout the year. The first should deal with the physical and the physical-social sciences; the second with the social sciences, history, philosophy, and religion; and the third with the arts.

Survey courses in the first two of these fields are now given in many colleges. The University of Chicago is, so far as I know, the only institution providing the full triple series.

The method of these courses should be determined in accordance with the answer given by the organizer to these two questions: "How shall I best give the students some initiation into the several fields which they have not touched hitherto?" and "How shall I lead them to bring together into an ordered whole the stocks of information and of interest which they have gained or are gaining in other courses, in this course, or elsewhere?"

The twofold purpose of the course creates a special problem in organization. During each portion of the course the student personnel will comprise both students who have already covered the subject in question and students to whom that subject is new. The composition of the two groups will shift as the course reaches each new field. Clearly the same treatment will not be adapted to both groups. The

situation will best be met by dividing the course, for each of the different portions, into two sections, one for each of the two groups, the sectioning changing as the course enters each new field. In the section consisting of those who have already studied the subject in question the paramount purpose will be that of emphasizing the synthetic significance of the subject, particularly its relationship with adjacent subjects. Differential programs of collateral work may readily be planned. Books which themselves interweave results or theories in different fields may be of particular value in this connection. Students in the experienced section may be used to some extent as helpers in the initiation of students who are in the inexperienced section.

A third purpose, which is in reality a special phase of the first, is the renovation, at the sophomore level, of the student's acquaintance with subjects which he has studied in high school but not in college.

Each of the three courses should be something more than a series of descriptions of related subjects; each should be given coherence and vitality by some specific inner character. For the course in the physical sciences this inner character is quite obviously afforded by the concept of evolution. For the course in the social sciences the same concept may be continued, or, since the problem here is that of conduct, the course may proceed by the discussion of current problems, involving individual or group conduct, in the several fields considered. For the course in the arts, while the evolutionary background may well be recognized, the specific purpose should be to give each student a chance to realize something of the enrichment of life that lies for him in acquaintance with the works of art, the music, and the literature available to him, and to render each student more sensitive to the values, in life itself, which form the data of artistic re-creation.

#### IMPORTANCE OF INDEPENDENT READING

A second means of integration, necessary if general-survey courses are for any reason not given, and in some cases desirable per se, is self-initiation into a given field through independent reading of the best initiatory books. I shall turn in a moment to the question of general reading. My present suggestion is that a good student may well be encouraged to enter alone some field quite new to him,—alone, that is, in companionship with the thought of able writers. Current collegiate experience still tends all too much to give the impression that the only way to gain knowledge of a subject is to take a course in it. We are seeking not only to see that our students

get knowledge but also to train them in the acquisition of knowledge. The formation of the habit of the acquisition of knowledge through the independent use of books is a major factor in this training; and if this habit is not formed in college, it is not likely ever to be formed.

We have made great progress, within the limits of the individual course, in the use of books rather than of lectures for the gaining of certain bodies of information. But the practice of discovery through independent reading should be still further emphasized and given still further scope. I therefore strongly recommend that at least one field be covered by the student through private reading, that such reading be regarded by the college as equivalent to course-taking, and that for practical purposes it be duly tested and credited.

Still more important is the development, as a phase of general education, of the habit of general reading. The college experience should be such as to merge gradually into the later experience of life. The process of education in the college should be so devised that it may continue naturally and readily throughout life. The idea that education stops with commencement is a tragic absurdity. Now the normal means of education in later life (aside, of course, from the more or less haphazard education of personal experience) is the reading of books, particularly current books, and current periodicals. Therefore the habit of the discriminating reading of current books and periodicals should be formed in college. In this instance also, if the habit is not formed in college it is not likely ever to be formed.

Notable interpretations of life, notable suggestions for the betterment of the conditions of life, and notable reviews of significant books are constantly appearing in the weekly and monthly press. Through books themselves come most clearly the significant records of past lives and the voices of our own prophets. Books and periodicals alike bring store for literary satisfaction; and some are good and some are negligible and some are bad. It is true, again, that current books and periodicals are being used more than ever before in connection with particular courses, but it is also true that the greater part of what we call current literature is not likely to be made known to the students through the courses they take. How then shall it be made known to them?

Acquaintance with current literature can hardly be a thing superadded to a curriculum already completely full. There is a limit to the use of eyesight and to the use of the reading faculty. There must be no infringement upon the time needed for recreation and for sleep. The answer is, then, obviously, to reduce the amount of ordinary course work sufficiently to make possible the practice of a considerable amount

of general reading. If the course mechanism be necessary, the reading can be done under the ægis of a special course name and number; but it would be better that it should be done in some other way. The library and the librarian should presumably have a major responsibility in this matter, and the college bookstore should be an ally and not an enemy. Guidance is necessary, but the guidance should be suggestive rather than imperative.

This reading is, strictly speaking, quasi-curricular. It should be the main quasi-curricular experience. There are other types of experience which, though secondary, are of the same order. Such, for instance, is the study, at first hand, of some type of community life and work accessible to the college; and such is the whole range of lectures, dramatic performances, concerts, and exhibitions — too often overdone, too seldom planned with definite reference to the whole process of college growth.

#### PRELIMINARY SPECIALIZATION

The first two years of the college course, while devoted primarily to general education, should include also some measure of special education, that is, some fairly intensive study of a given field. Such study is indeed a necessary complement to general education as a means of training students in the processes of the acquisition and the use of knowledge; for if the mind is to function effectively in solving the varied and unexpected problems which will confront it throughout life, it must have the experience of striking deeply into one particular range of thought. Without this experience the lesser study of several different fields might tend toward superficiality. Such specialization should not only give some sense of mastery in the chosen field but should convince the student that only specialization can give mastery in any field, and should establish in him a habit of specialistic achievement transferable to work in other fields.

The specialization of the first two years, however, is preliminary, not final. It does not seek the absolute mastery of a given field as an end in itself; it is concerned with the attainment of the experience of intensive work and with the establishment of a transferable habit of specialization. Consequently it may or it may not lie in the field which is to be chosen for the final specialization.

In the case of a student who on entrance does not know what his field of final specialization is to be, the field of preliminary specialization should be chosen, under guidance, with reference to his natural tastes and abilities. If the preliminary specialization should confirm the student in such tastes and abilities, he may very naturally con-

tinue in the same field ; but if some other interest should develop to a greater power during his first two years, that other interest rather than the first should become the field of his final specialization.

If the student on entrance does know what he is to do after graduation, it does not follow that his preliminary specialization should lie in the line of his vocational intent. The chances are, indeed, that it should lie elsewhere. For the principle of adaptation to the individual need of the student might well mean, in this connection, the development of interests, old or new, outside of the field in which he is to specialize. The development of these non-special interests is a precious thing, likely to add, to that breadth of outlook which the program of general education should in any case provide, a free-ranging, individual eagerness which should forever prevent undue narrowness and should forever increase a man's value in companionship.

The foregoing pages have developed the belief that the curriculum of the individual student, so far as his general education is concerned, should be determined with reference to the principles of adaptation to individual need, major significance, group representation, and integration ; they have suggested orientation courses and independent reading as means of integration ; they have urged the attempt to create a habit of general reading ; and they have pointed out the necessity of preliminary specialization as a concomitant of general education. Before we pass on to a consideration of the final specialization proper to the last two years of the college course, it may be well to illustrate in a particular imaginary case the application of what has been said hitherto.

#### APPLICATIONS OF CURRICULAR PRINCIPLES

Let us suppose, then, that Harper Eliot comes to college after the completion of a good high-school course ; that he has received in the fields of mathematics, physics, geography, history, and French as good a training as the requirements of general education would demand ; and that his most marked tastes and abilities are in the field of history. Let us suppose, further, that during his four years in college he is to take three full-time courses through each autumn, winter, and spring, — a total of nine courses each year and of thirty-six for his entire college program ;<sup>2</sup> that eighteen of these courses are to be devoted to gen-

<sup>2</sup> I am stating the supposed case in terms of the quarter system because I firmly believe in the excellence of that system. Its adaptation to the needs of general education is indeed a main argument in its favor. The illustration may, however, be readily translated into other terms.

eral education, six to preliminary specialization, and twelve to final specialization; that the first two years are to contain twelve of the courses devoted to general education, as well as the six devoted to preliminary specialization; and that the last two years are to contain the remaining six of the courses devoted to general education, as well as the twelve devoted to final specialization.

The principle of adaptation to individual need would suggest on its positive side that young Eliot's preliminary specialization should be in the field of history (thus indicating the subject of the six courses which are to constitute this phase of his education), and on its negative side that there is no need of his taking further courses in mathematics, physics, geography, or a foreign language.

He has now to choose the equivalent of eighteen courses for the completion of his general education. The principle of major significance will account for four of these by its specification of hygiene, psychology, logic, and English. Let us suppose, further, that he shows enough aptitude in psychology to justify his taking two additional courses in that field, and that he proves to need two courses in English. Seven of the eighteen courses are thus accounted for.

Reference to the list of groups of subjects will next suggest that he should take an introductory course or course sequence in each of the following groups: the biological sciences; economics-political science; philosophy-religion; the literatures; architecture-sculpture-painting-music. If he should take a single course in each of four of these groups and a two-course sequence in the fifth (say, economics-political science), he would thus expend six of his remaining eleven courses.

Of the five courses still left, three should be orientation courses. Of the other two, one might well be a course in independent reading devoted to initiation into a literary field otherwise untouched, and the other a course in general reading.

Twelve of the eighteen courses thus selected would come in his freshman and sophomore years. These should include the required courses in hygiene and logic, the first course in psychology, both courses in English, and the three orientation courses, — eight in all. The other four might well be the course in the biological sciences, the two-course sequence, and the course in general reading. There would then remain for his junior and senior years two courses in psychology, one in philosophy or religion, one regular course in literature, one reading course in literature, and one course in architecture or sculpture or painting or music.

In tabular form the individual curriculum of Harper Eliot might then appear as follows :

| YEAR                | QUARTER | COURSES IN<br>GENERAL EDUCATION  | COURSES IN SPECIAL<br>EDUCATION                                     |
|---------------------|---------|----------------------------------|---|
| Freshman . . . . .  | Autumn  | English ; Botany                 | History   |
|                     | Winter  | English ; Hygiene                | History   |
|                     | Spring  | Logic ; Psychology               | History   |
| Sophomore . . . . . | Autumn  | Orientation ; Economics          | History   |
|                     | Winter  | Orientation ; Economics          | History   |
|                     | Spring  | Orientation ; General<br>Reading | History   |
| Junior . . . . .    | Autumn  | Psychology                       | Subject of final<br>specialization :<br>two courses each<br>quarter |
|                     | Winter  | Psychology                       |   |
|                     | Spring  | Literature                       |   |
| Senior . . . . .    | Autumn  | Architecture                     |   |
|                     | Winter  | Literature (reading)             |   |
|                     | Spring  | Philosophy                       |   |

The foregoing illustration (let me make it quite clear) is intended merely as a study in possibilities. I do not insist upon its proportions, or upon its distribution in time, or upon its details. For a student entering with other equipment and with a definite vocational plan a very different curriculum would be advisable.

### FINAL SPECIALIZATION

Two thirds, or thereabouts, of the last two years of the college course should be devoted to the student's final specialization. The field of this specialization should be chosen with reference to the interests which are likely to dominate the student's later life.

The present frequent lack of relation between college experience and ultimate settlement within a given profession or other line of life work is indeed a deplorable, even a tragic, circumstance. Surely every endeavor should be made to utilize the final collegiate specialization in such a way as to qualify the man or woman directly for that which he or she is chiefly to be and to do.

The choice of the final special field is therefore a matter of critical importance in the building of the individual curriculum. Here, even more than elsewhere, the student needs the most patient and the most expert guidance that the college can possibly provide. Preconceived ideas as to vocation may prove on examination to be unwise, and the many students who have as yet no definite life plan must be helped in the making of reasoned plans. We know all too little as



yet about the relationships between certain different characteristics and certain occupations (and this is one of the main arguments for the concentration of effort upon advance in psychological research), but the student is entitled to the advantage of all that we do know.

A man finally resolved to enter a given profession or vocation should certainly choose for his final collegiate specialization the field of his profession itself (if undergraduate work within that field is offered in his college) or a field definitely preparatory for his professional work,—chemistry, for instance, if he going into medicine, or economics if he is going into business. In the case of a man whose vocational intention is but tentative, the field chosen should presumably be pre-professional rather than professional.

### CURRICULUM FOR WOMEN

The college woman of today faces a twofold prospect. In the first place, she is likely ultimately to have home-making as a primary or secondary occupation.<sup>3</sup> In the second place, she has or should have some other definite field of interest, which may or may not be vocational. Her final specialization, therefore, should in general be twofold.

Home-making as a vocation is second to none in significance or in difficulty; yet it is done, for the most part, without specific preparation, on the basis of family tradition, of individual instinct, and of trial and error. Is there any reason why a woman in college should not prepare for this profession with the utmost care, entering into the stored and swiftly developing knowledge that will help her directly in the many and varied problems of the creation and maintenance of a true home? If there is not, we are driven to the conclusion that for most women, except those definitely resolved to espouse an independent profession, home economics, including the psychology of home relationships, should be at least a secondary field of collegiate specialization.

Yet these same women should have as well some other field, primary or secondary, of special interest; for no reasonable person in this day and generation would think of limiting women's interest to the

<sup>3</sup> Statistics gathered by L. V. Koos (*The Junior College Movement*, Ginn and Company, 1925), pp. 208–209, with regard to the occupations in the first and tenth years after graduation, of 550 woman graduates representing a dozen different colleges, show that in the first year after graduation 12 per cent were engaged in advanced study, 72 per cent in educational work, 6 per cent in home-making, and 10 per cent in other occupations; and that in the tenth year after graduation 55 per cent of the same women were engaged in home-making, 25 per cent in educational work, and 20 per cent in other occupations.

home, or of denying them full right of access to all human knowledge and experience, or of belittling the immense social need of their participation in the solution of our infinitely serious and complex social problems.

A woman, having thus two fields of specialization, will need somewhat more total time for specialization, particularly if one of her fields be definitely vocational, than a man, who has one field of specialization. The additional time thus necessary may be saved through a lessening of the time spent in general education, or through the partial or complete equation of the preliminary and one of the final fields of specialization.

### SPECIAL PROBLEMS

Many college graduates, both men and women, enter the field of education. Leadership in that field requires a double equipment: knowledge of a particular subject and a general knowledge of educational procedure. The second part of this equipment is all too often neglected,—left, like home-making, to individual instinct and to trial and error. This neglect results not only in needlessly poor teaching but in the failure of the teacher to see as a whole the enterprise of the school or the college in which he lives and works, and in his consequent failure to do his part constructively as colleague in the solution of its common problems. It follows, therefore, that any student intending to teach should supplement his or her special work in a particular subject by courses and by directed reading in the field of education.

When a field of specialization has once been chosen, the control of the individual curriculum should be primarily departmental. The department should have the power not only to advise and in effect to determine what courses the student should take, but to determine the extent to which individual independent work may be encouraged and expected in lieu of course work. The principles here involved are essentially the same as those discussed above in connection with self-initiation into a particular field and in connection with general reading, and the discussion need not be repeated here.

The specific forms in which these principles are now finding expression are the special plan of major work now in effect at Harvard, Princeton, and elsewhere, and the honors course.

I have written hitherto in terms of the current four-year college, and without differentiating the separate four-year college from the liberal-arts college within the university. Into the details of the curricular variation natural in different types of collegiate institutions I will not attempt to enter. I should like, however, to suggest that in the college

within the university, where large library resources and laboratory equipment are available and graduate or professional schools are at hand, the process of special education should play a relatively larger part than in the separate colleges, which can best render a distinctive service through the prolongation and great development of general education.

The junior college, conceived as a terminal institution, should be devoted almost wholly to general education — with provision, however, for some measure of special education, designed primarily for the establishment of the habit of thorough penetration into a given field.

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## CHAPTER XV

### STUDENT RECORDS AND ACCOUNTING

By GEORGE F. ZOOK, President of the University of Akron

The importance of adequate student records can hardly be over-emphasized. Complete registrar's records are as vital to the academic side of an institution as complete financial records are to the business office. A college owes it to the parents who intrust students to its care, to the students themselves, and to other institutions to which transcripts are sent, that complete records pertaining to each student be made out and permanently protected from the possibility of either damage by fire or tampering by irresponsible individuals.

While the forms used in various institutions differ greatly in both number and style, the fundamental purposes for which such forms are used are the same. We may distinguish four main classes: (1) those which relate to questions of admission, (2) those pertaining to matriculation, or registration, (3) those which are used during the college course, and (4) those pertaining especially to the alumni. These fields have been made the subjects of various special studies and reports, and the limitations of space forbid here anything beyond a general consideration of fundamentals.

#### ADMISSION RECORDS

The one record which is absolutely essential to a college in determining the eligibility of applicants is the so-called high-school certificate, or certificate of recommendation. Fig. 1 shows the form adopted by the National Association of Secondary School Principals and by the American Association of Collegiate Registrars. Many types of this form are in use, the chief variation being the four-page blank instead of the single sheet. Many of the certificates require much more information than is shown on the standard blank, sometimes including the texts used in each course and the pages covered. An estimate of personal qualifications is also frequently included. In some cases safety paper is used for the blank, but if the rule is followed strictly that certificates will never be accepted from the students but must be

received directly from the secondary school, this precaution should not be necessary.

A diploma should never be accepted by a college as sufficient evidence of secondary-school work. Complete certificates should always be required, and after the information has been copied on the permanent record they should be carefully filed, — not returned to the students.

The application blank is another form used by many colleges in connection with admissions. This blank varies from a simple sheet printed in the catalogue to a formidable blank with provision for the entire life history and photograph of the applicant. Fig. 2 (Swarthmore College) illustrates one of the simpler forms, the opposite side containing provision for references and notations by the college. In some cases the application blank merely repeats information given on the high-school certificate and could be dispensed with, especially in the case of small colleges or institutions which draw most of their students from local territory where personal application is preferable.

In some cases a physician's statement is also required prior to matriculation. Fig. 3 (Vassar College) shows one of the more detailed forms used.

Sometimes other blanks are also used in connection with admissions, but the foregoing are the most important. After a student's application has been accepted, however, it is customary to notify him accordingly. Some institutions use blanks for this purpose, one of the simplest of which is shown in Fig. 4 (University of Kentucky), which is printed on an ordinary postal card. The University of Chicago uses a form letter for first notification, followed by an  $8\frac{1}{2} \times 11$  sheet, printed in the general form of a high-school certificate, on which are indicated the credits accepted. A number of institutions use only personal letters for notice of admission.

### REGISTRATION RECORDS

A satisfactory system of registration should make provision for securing, in the case of new students, at least the following results: (1) the financial office should receive evidence that the student has been admitted (the possession of proper blanks by the student is frequently sufficient); (2) the registrar should receive the high-school certificate or college transcript, with evaluation of credits and evidence of acceptance by the officer in charge of admissions, and also the official registration blank, approved study list, and evidence that fees have been paid; (3) the instructors should receive class lists or class cards showing the *registered* students assigned to each section; (4) the student should retain a copy of his study list and should receive a receipt for fees paid and such other records as conditions at the particular in-

# CERTIFICATE OF RECOMMENDATION

\* Uniform blank adopted by the National Association of Secondary School Principals

This is to certify that \_\_\_\_\_  
*Give name in full*

\_\_\_\_\_ *Number of Street* \_\_\_\_\_ *City* \_\_\_\_\_ *State*

was graduated from the \_\_\_\_\_ High School of \_\_\_\_\_  
 on \_\_\_\_\_ 19\_\_\_\_, has completed the work shown in detail below, and is *hereby recommended*  
*for admission without examination* to the \_\_\_\_\_

\_\_\_\_\_ of \_\_\_\_\_  
*University or College* \_\_\_\_\_ *College or Department*

Date of birth \_\_\_\_\_ 19\_\_\_\_ Entered this school \_\_\_\_\_ 19\_\_\_\_ He is in the <sup>upper</sup> <sup>middle</sup> <sup>lower</sup> third of his class  
 Date \_\_\_\_\_ 19\_\_\_\_ \_\_\_\_\_ Principal

| STUDIES               | YEAR OF COURSES WHEN TAKEN<br>I, II, III, IV | NUMBER OF WEEKS PURSUED | NUMBER OF PERIODS PER WEEK | GRADE | STUDIES              | YEAR OF COURSES WHEN TAKEN<br>I, II, III, IV | NUMBER OF WEEKS PURSUED | NUMBER OF PERIODS PER WEEK | GRADE |
|-----------------------|--|-------------------------|----------------------------|-------|----------------------|--|-------------------------|----------------------------|-------|
| ENGLISH — First Year  | —  | —                       | —                          | —     | GEOMETRY . . . . .   | —  | —                       | —                          | —     |
| Second Year . . . .   | —  | —                       | —                          | —     | Solid . . . . .      | —  | —                       | —                          | —     |
| Third Year . . . . .  | —  | —                       | —                          | —     | TRIGONOMETRY . . . . | —  | —                       | —                          | —     |
| Fourth Year . . . . . | —  | —                       | —                          | —     | PHYSICS . . . . .    | —  | —                       | —                          | —     |
| History of Literature | —  | —                       | —                          | —     | Laboratory . . . . . | —  | —                       | —                          | —     |
| GREEK — First Year    | —  | —                       | —                          | —     | CHEMISTRY . . . . .  | —  | —                       | —                          | —     |
| Second Year . . . . . | —  | —                       | —                          | —     | Laboratory . . . . . | —  | —                       | —                          | —     |



stitution require, such as a certificate of admission or an athletic ticket. In the case of former students the records of admission will be omitted, but the registrar should receive a registration card or directory card with up-to-date vital statistics, as well as a copy of the study list. The directory card and study list are frequently combined.

The records used by the deans vary so widely as to make categorical rules impossible. In some cases the dean receives no record of student registration whatever; in other cases he receives a duplicate of every class card. Midway between these two extremes we find the practice

|   |  |
|---|--|
| APPLICATION FOR ADMISSION TO SWARTHMORE<br>COLLEGE IN SEPTEMBER<br>DATE OF APPLICATION _____ 19____ | FULL NAME AND ADDRESS _____<br>(Write surname first)     |
|   | _____  |
|   | NAME, ADDRESS AND OCCUPATION OF PARENT OR GUARDIAN _____ |
|   | _____  |
|   | DATE OF BIRTH _____ PLACE OF BIRTH _____                 |
|   | NAME OF PREPARATORY SCHOOL _____                         |
|   | SCHOOL HONORS _____                                      |
| RELIGIOUS AFFILIATION _____   |  |
| THIS CARD SHOULD BE FILLED OUT AND RETURNED TO THE DEAN<br>SWARTHMORE COLLEGE, SWARTHMORE, PA.      |  |
| N-11-28-3002  | (OVER)   |

FIG. 2. Application blank, Swarthmore College. 6 x 4 in.

of a large number of institutions which provide the dean with a single directory card for each student, generally including the study list. (In case the dean is in charge of student records, what has been said of the registrar will apply to him instead.)

Many colleges also provide similar records for the dean of men or women and the class adviser. Similar cards, but usually without the study list, are also frequently provided for the library, the official directory, the college paper, the employment office, religious organizations, social organizations, etc.

Fig. 5 (University of Washington) illustrates a registration blank which contains the study list. In this case a separate census card (often called a directory card) is used for complete vital statistics. Many institutions call the directory blank the official registration card, and use a separate form for the official study list. Sometimes both are contained in the same blank.



# VASSAR COLLEGE

## Certificate of Physical Examination

*This form is to be filled out by a physician and forwarded to the Committee on Admission before July 1.*

I have examined Miss \_\_\_\_\_ Home Address \_\_\_\_\_  
and certify to her physical condition as follows:

1. Age \_\_\_\_\_ height \_\_\_\_\_ weight \_\_\_\_\_
2. Has she been successfully vaccinated? \_\_\_\_\_ At what age? \_\_\_\_\_
3. What communicable diseases has she had? \_\_\_\_\_
4. What other serious illnesses? \_\_\_\_\_
5. What surgical operations? \_\_\_\_\_
6. Condition of skin \_\_\_\_\_
7. Condition of eyes \_\_\_\_\_
8. Condition of ears \_\_\_\_\_
9. Condition of nose and throat \_\_\_\_\_
10. Condition of heart \_\_\_\_\_  
blood pressure \_\_\_\_\_  
blood condition \_\_\_\_\_
11. Condition of lungs \_\_\_\_\_
12. Condition of kidneys \_\_\_\_\_ sg. \_\_\_\_\_ alb. \_\_\_\_\_ sugar \_\_\_\_\_ mic. \_\_\_\_\_
13. Condition of thyroid \_\_\_\_\_
14. Condition of lymphatic glands \_\_\_\_\_
15. Condition of spine \_\_\_\_\_
16. Condition of nervous system \_\_\_\_\_
17. Condition of digestion, including appendix \_\_\_\_\_
18. Menstrual history \_\_\_\_\_

REMARKS: (Please give any additional information about the health of the candidate which will help the college authorities to promote her welfare.) \_\_\_\_\_

(Signed) \_\_\_\_\_ M.D.

Residence \_\_\_\_\_

Date \_\_\_\_\_

5694

FIG. 3. Physician's statement, Vassar College.  $8\frac{1}{2} \times 11$  in.

# University of Kentucky

Office of the Registrar

Lexington

## ADMISSION CARD

Your preparatory certificate has been received and is on file in this office. If there is any information you desire in regard to the University, we shall be glad to furnish it. You have college credits.

Yours truly,

EZRA L. GILLIS,

Registrar

Registration Sept. 192

FIG. 4. Notice of admission, University of Kentucky. Postal card

OFFICIAL REGISTRATION BLANK FOR \_\_\_\_\_ QUARTER \_\_\_\_\_

2

|                             |   |       |
|-----------------------------|---|-------|
| Name _____                  | College _____<br>e. g. Lib. Arts                  | Stamp |
| Student's Signature _____   | Major _____<br>e. g. History, Educ.,<br>Pre-Educ. |       |
| Local (Univ.) Address _____ | Class _____<br>e. g. Soph.                        |       |
| Tel. No. _____ Date _____   |   |       |

| Department        | Course No. | Credit Hrs. | Sec. | TIME-HOUR |   |   |    |   |   |  | Sec. App. | Instructor |
|-------------------|------------|-------------|------|-----------|---|---|----|---|---|--|-----------|------------|
|                   |            |             |      | M         | T | W | Th | F | S |  |           |            |
| Mil. Sci. and Tr. |            |             |      |           |   |   |    |   |   |  |           |            |
| Phys. Ed.         |            |             |      |           |   |   |    |   |   |  |           |            |
|                   |            |             |      |           |   |   |    |   |   |  |           |            |
|                   |            |             |      |           |   |   |    |   |   |  |           |            |
|                   |            |             |      |           |   |   |    |   |   |  |           |            |
|                   |            |             |      |           |   |   |    |   |   |  |           |            |
|                   |            |             |      |           |   |   |    |   |   |  |           |            |
|                   |            |             |      |           |   |   |    |   |   |  |           |            |
|                   |            |             |      |           |   |   |    |   |   |  |           |            |
|                   |            |             |      |           |   |   |    |   |   |  |           |            |

Total Credit Hours \_\_\_\_\_ Number hours outside work per week \_\_\_\_\_

Irregular hours approved by \_\_\_\_\_  
Dean

Deficiencies \_\_\_\_\_

FIG. 5. Registration blank containing the study list, University of Washington. 6 x 4 in.

Regardless of the form used, or the number of copies made for various purposes, a satisfactory registration blank is essential. Andrews<sup>1</sup> suggests the following for a complete registration record:

Part I. Student's Directory

1. Name in full
2. Home address
3. College address
4. Place and date of birth..... Age.....
5. Church membership or preference
6. Name of parent or guardian
7. Address of parent or guardian
8. Occupation of parent or guardian
9. Preparatory school from which certificate was offered
10. (For freshmen only)
  - a. Entrance subjects offered
  - b. Entrance units credited
  - c. Entrance conditions
11. (For other students) Subjects on which failed or conditioned

Part II. Class Assignment Blank

1. College, school, or course
2. Class
3. Subjects selected in detail
  - a. Required subjects and elective subjects grouped or marked
  - b. Hours per week in each subject
  - c. Time and day of each recitation
  - d. Value of each in units
  - e. Number of the division of the class
  - f. Name or signature of the professor or instructor
  - g. Location of classroom
4. Approval of college officers
5. Bursar or treasurer
  - Fees in detail
6. Date

The paper work involved in the preparation of these numerous registration records has reached such proportions as to present a serious problem if not properly provided for. The usual solution is to shift as much of the clerical work as possible from the college staff to the students themselves. In some cases this idea is carried so far that the registration officials do nothing but check, approve, stamp, or sign records already prepared by the students. The chief difficulties encountered in this method are apt to be illegibility and inaccuracy, al-

<sup>1</sup> Benjamin F. Andrews. Registration and Student Records for Smaller Colleges. *United States Bureau of Education Bulletin No. 33*, 1916, p. 28.

though some institutions report as satisfactory results as was the case when much of the work was done by the staff.

The self-registration plan, as this system is called, requires forms which are clear and easily understood. A simple and systematic technique of procedure is also essential. Well-arranged forms will not secure a smooth registration in the face of inadequate facilities, a poorly organized staff, or an atmosphere of confusion.

In case numerous blanks are to be filled out by the students, the method of arranging them must be decided upon. Three chief methods are in use: (1) loose cards or sheets, (2) cards attached in strips or sheets, and (3) cards or slips bound in booklet form. Many institutions which use attached blanks also provide one or more separate forms for special purposes; for example, a registration card.

Loose cards or sheets possess the maximum of flexibility, as various sizes and stocks of paper can be used for the different blanks, according to the nature and purpose of the record. If a considerable number of such loose forms are given to a student at one time, however, there is always danger of one or two being lost or misplaced, and careful checking is required when they are turned in. This system is apt to be most successful where only a few blanks are made out by the students.

Fig. 6 (Pennsylvania State College) illustrates the sheet form, which retains flexibility of size but is perhaps a little less convenient than the strip form as shown in Fig. 7 (Iowa State College). The latter, however, is still less flexible, although the width of the individual cards can be varied, as is done by the University of Michigan and other institutions using this type of record.

The booklet form originated at Stanford University. This type is the most convenient from the standpoint of the student, as the booklet is compact and the stub of each page gives full directions relative to that particular blank. The chief disadvantages are the expense and the temptation to increase the number of blanks beyond the number necessary, with resulting increase in the work of the registrar's office.

The booklet shown in Fig. 8 (Stanford University) contains seventeen sheets (all but the last of which measure  $3 \times 5$  inches), numbered as follows: 1*a*, comptroller's office, general fees; 1*b*, comptroller's office, delayed special fees; 2*a*, trial study list; 2*b*, registrar's study list; 2*c*, major professor's study list; 2*d*, order for photograph; 3*a*, directory and information; 3*b*, study list for dean of men or women; 3*c*, appointment office; 3*d*, associated students directory; 3*e*, religious; 3*f*, vaccination; 3*g*, honor-system pledge; 4*a*, library directory; 4*b*, post-office directory; 5*a*, physical or military training



Write in Ink as Plain as Print  
**MEN--AGRIC., VET., AND ALL NON-COLLEGIATE**

Name in Full (Last name) (First name) (Middle name)  
 Course (Last name) (First name) (Middle name)  
 Year: Fr. So. Jr. Sr. Non Col. 1st 2nd  
 Home Address  
 Street No. City  
 County State  
 College Address Phone No.  
 Church Preference (Which Church?)  
 Are you a member? (Yes or No)  
 Parent or Guardian  
 Address  
 Spring '29

**DO NOT DETACH INFORMATION**

**IOWA STATE COLLEGE**  
**TREASURER'S COUPON**

**IOWA STATE COLLEGE**  
**DEAN'S DIRECTORY**

Name in Full (Last name) (First name) (Middle name)  
 Course (Last name) (First name) (Middle name)  
 Year: Fr. So. Jr. Sr. Non Col. 1st 2nd  
 Home Address  
 Street No. City  
 County State

If not a new student, when last registered?  
 TO BE DELIVERED BY THE STUDENT TO CLASSIFYING DEAN (OVER)  
 Spring '29

**STATISTICS**

FIG. 7. Registration cards attached in single strip, Iowa State College.  
 Eight cards, each 5 x 3 in., are provided

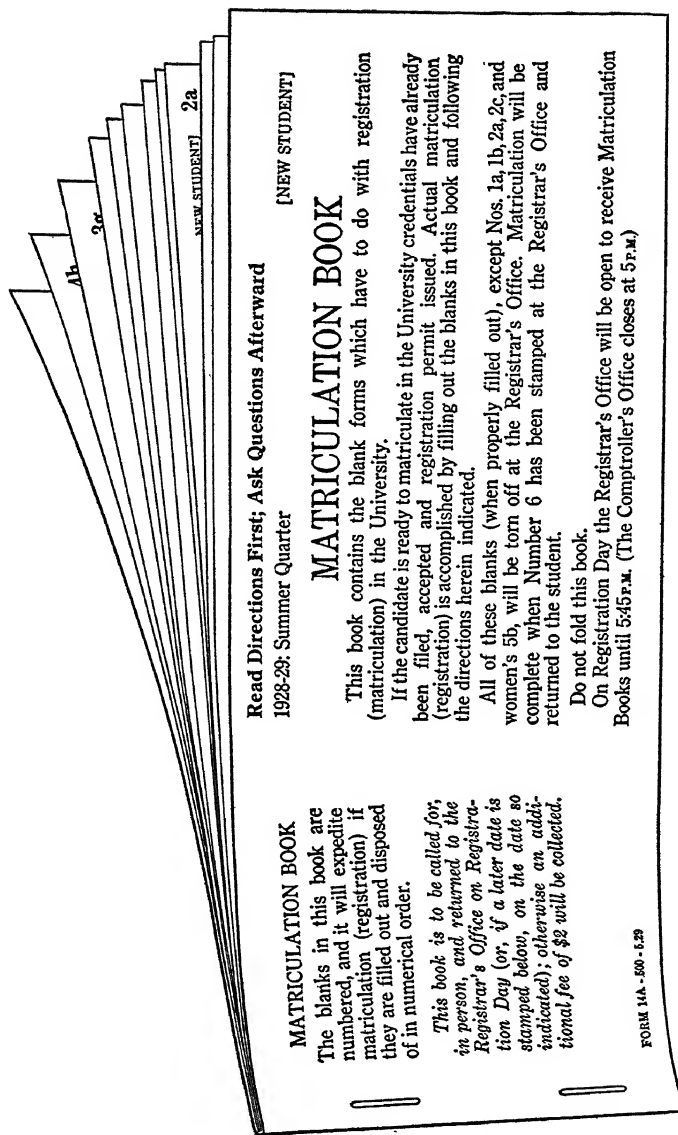


FIG. 8. Registration blanks in booklet form, Stanford University. The booklet measures  $7\frac{1}{2} \times 3$  in.; the blanks,  $5 \times 3$  in., with complete directions printed on each stub. Sixteen blanks and one card are provided

(omitted for upperclassmen); 5*b*, physical examination; 6, certificate of registration and athletic admission ticket combined.

The University of Washington uses a booklet providing 4 × 6 blanks as follows: (1) trial study list; (2) official registration blank, including study list; (3) dean's study list; (4) study list for dean of men or women; (5) comptroller's blank; (6) directory and address card; (7) university census card.

The limited time available between the closing of registration and the beginning of class sessions necessitates as simple a system as possible for providing instructors with accurate information as to the students entitled to be admitted to class. The preparation of class lists for this purpose involves so much labor that class cards are widely used instead. Under the self-registration plan each student makes out a class card for each subject taken. These cards are either retained by the students for presentation to the instructors or are collected and distributed to the instructors by the registrar's office. One of the chief points to watch in the operation of this method is that no class card shall get to an instructor unless the student has actually completed registration and paid all fees. If the system is properly arranged, this will be taken care of automatically without checking.

The actual use made of class cards differs widely. Sometimes they simply admit to class; sometimes they are used for a temporary class roll; sometimes they constitute the permanent class roll; and sometimes they are used for the instructor's final report of grades or attendance, or both. Some institutions furnish class lists and instructors' class books in addition to the class cards. In some cases duplicate class cards are made for the dean or the registrar. Different colors may be used to indicate different divisions or colleges.

Various types of class cards are illustrated by Fig. 9 (University of Illinois), Fig. 10 (University of Akron), Fig. 11 (Carleton College), Fig. 12 (Ohio State University), and Fig. 13 (Vassar College). The most popular size is 5 × 3, although smaller sizes are sometimes used, especially when printed in attached form.

A few institutions still allow registration by mail. For satisfactory results this method requires easily understood curricular requirements, uniform or readily computed fees, and simple blanks. The process is essentially the same by both methods, but most institutions have found that if personal registration is properly organized it is less expensive and more satisfactory than registration by mail.



| CLASS CARD  |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
|---|------------|------------|------------|----------------|------------|------------|------------|-------------------|------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------|
| Name in full.....   |            |            |            |                |            |            |            |                   |            | Date.....   |             |              |             |             |             |             |             |             |           |
| (Give last name first, write as plain as print)   |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
| Subject.....  |            |            |            | Course No..... |            |            |            | Credit Hours..... |            |             |             | Section..... |             |             |             |             |             |             |           |
| Hours.....  |            |            |            | Days.....      |            |            |            | College: AGR.     |            |             |             | Course.....  |             |             |             | Class.....  |             |             |           |
| Not valid unless stamped<br>by the Registrar.   |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
| The student will NOT fill out BELOW THIS LINE   |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
|   | 1st<br>wk. | 2nd<br>wk. | 3rd<br>wk. | 4th<br>wk.     | 5th<br>wk. | 6th<br>wk. | 7th<br>wk. | 8th<br>wk.        | 9th<br>wk. | 10th<br>wk. | 11th<br>wk. | 12th<br>wk.  | 13th<br>wk. | 14th<br>wk. | 15th<br>wk. | 16th<br>wk. | 17th<br>wk. | 18th<br>wk. | Registrar |
| Monday.....   |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
| Tuesday.....  |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
| Wednesday.....  |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
| Thursday.....   |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
| Friday.....   |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
| Saturday.....   |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
| At the end of the semester, the instructor will enter final grade, sign, and return to Registrar's Office |            |            |            |                |            |            |            |                   |            |             |             |              |             |             |             |             |             |             |           |
| Semester Grade.....   |            |            |            |                |            |            |            |                   |            | Instructor  |             |              |             |             |             |             |             |             |           |

FIG. 9. Class card, University of Illinois. 5 × 3 in. Printed singly

| CLASS CARD  |  |  |  |  |  |  |  |  |  |                |   |   |   |                |   |   |   |              |   |   |   |
|---|--|--|--|--|--|--|--|--|--|----------------|---|---|---|----------------|---|---|---|--------------|---|---|---|
| Name.....   |  |  |  |  |  |  |  |  |  | Semester.....  |   |   |   |                |   |   |   |              |   |   |   |
| Last name first   |  |  |  |  |  |  |  |  |  |                |   |   |   |                |   |   |   |              |   |   |   |
| Subject.....  |  |  |  |  |  |  |  |  |  | Course No..... |   |   |   | Cr. Hours..... |   |   |   | Section..... |   |   |   |
| College.....  |  |  |  |  |  |  |  |  |  |                |   |   |   |                |   |   |   |              |   |   |   |
|   |  |  |  |  |  |  |  |  |  |                |   |   |   |                |   |   |   |              |   |   |   |
|   |  |  |  |  |  |  |  |  |  | M              | T | W | T | F              | S | M | T | W            | T | F | S |
| Attendance first two weeks  |  |  |  |  |  |  |  |  |  |                |   |   |   |                |   |   |   |              |   |   |   |
| First report of Grades  |  |  |  |  |  |  |  |  |  |                |   |   |   |                |   |   |   |              |   |   |   |
| Second report of Grades   |  |  |  |  |  |  |  |  |  |                |   |   |   |                |   |   |   |              |   |   |   |
| Signature of Instructor.....  |  |  |  |  |  |  |  |  |  |                |   |   |   |                |   |   |   |              |   |   |   |
| To the Instructor: Class cards are used as a temporary class list until class books are made up. Return to Registrar's office at end of two weeks. Use reverse side for remarks on grade reports. |  |  |  |  |  |  |  |  |  |                |   |   |   |                |   |   |   |              |   |   |   |

FIG. 10. Class card, University of Akron. 5 × 3 in. Printed singly

# CARLETON COLLEGE

## CLASS CARD

This card will permit M.....  
to enter the class in.....at period.....

September, 1925.

PETER OLESEN,  
Registrar.

At the close of this course the instructor will fill in both blanks below, sign and return this card promptly to the office of the Registrar.

Hours credit..... Grade.....

January, 1926.

.....  
*Signature of Instructor.*

FIG. 11. Class card, Carleton College. 5 × 3 in. Printed as part of sheet containing registration forms, six class cards being included

| Last name            |  | 1st name             |    | 2nd name |    |   |   |
|----------------------|--|----------------------|----|----------|----|---|---|
| <b>Department</b>    |  | M                    | TU | W        | TH | F | S |
|                      |  |                      |    |          |    |   |   |
| <b>Course number</b> |  | <b>College: ARTS</b> |    |          |    |   |   |
|                      |  |                      |    |          |    |   |   |

FIG. 12. Class card, Ohio State University. 4 × 1½ in. Strip of eight cards is attached to registration form

| Last name first |               | Class        |  |
|-----------------|---------------|--------------|--|
| .....           |               | .....        |  |
| Department      | Course number | hours credit |  |
| .....           | ○             |              |  |

| Last name first |               | Class        |  |
|-----------------|---------------|--------------|--|
| .....           |               | .....        |  |
| Department      | Course number | hours credit |  |
| .....           | ○             |              |  |

**DUPLICATE**

FIG. 13. Class card, Vassar College, with duplicate for dean. 3 × 1½ in. Printed in double strip containing seven cards each

## RECORDS USED DURING THE COLLEGE COURSE

The permanent record form is the one indispensable registrar's record. It contains the official record of the student's work and should include everything which is considered of sufficient importance to justify permanent retention. If all vital information is transferred to the permanent record, the need for permanent auxiliary files will be greatly lessened.

When the permanent record is first opened, the registrar ordinarily has available the registration blank or directory card containing vital statistics, the official study list, and a record of entrance credits accepted. The minimum of vital statistics entered on the permanent record should include the name and address of the student and the name and address of the parent or guardian, although some institutions show only the former. In most cases the blanks also provide for one or more of the following: date and place of birth, age, occupation of parent or guardian, date of matriculation, class, and church affiliation. It is frequently desirable to provide also for fraternal affiliations to be entered later. On the whole there seems to be more danger of omitting valuable information from the permanent record than of including more than is necessary.

An accurate list of preparatory credits accepted for entrance is highly important. The usual practice is to print the list of acceptable secondary subjects on the permanent record sheet, with provision for writing in the number of units of each accepted. In some cases distinction is made between credit accepted by certificate and that secured by examination. Any entrance conditions or deficiencies should be clearly noted, with provision for recording date of removal; also the facts concerning any advanced credit allowed. This part of the record should also contain the name and address of the preparatory school or schools attended, with date of graduation.

The collegiate record should contain complete information of each subject taken, including at least the subject and course number, grade and credit secured if any, quality points if any, and college in which taken. A summary of the attendance record is desirable and sometimes essential. After graduation the degree conferred and the date should be entered. Any irregularities, disciplinary action, or faculty action of any kind concerning the student should be recorded at the time. A list of transcripts issued is occasionally kept, and also a record of such matters as honors, either academic or nonacademic. Many points of detail must be decided by the nature of the methods followed at the individual institution.

While the loose leaf or card has been adopted very widely for the permanent record, many sizes and types are found. Sheets as large as  $12 \times 15$  or even 20, and cards as small as  $5 \times 8$ , are not uncommon. The use of still smaller cards for annual records is hardly to be recommended. In most cases both sides are used, although some blanks, even in the smaller sizes, provide for the use of only one side, while many use the reverse side for only miscellaneous or general information. In some cases the blank is divided by years; in others this designation is made by omitting a line or in some such manner. In some cases the subjects or department names are printed on the blank; in others this information is written or stamped by the recording clerk.

Fig. 14 (Amherst College) is of the card type, divided by years, with subjects printed and with provision for considerable directory information; Fig. 15 (Columbia College of Columbia University) is of the loose-sheet type, not divided by years, without subjects printed, and with little directory information. In most cases the sheets are filed vertically, but in some institutions they are kept in loose-leaf binders, at least until graduation. The latter system is very convenient for smaller institutions.

While the list of subjects carried by each student can be entered on the permanent record from the official study list or the registration blank, final information concerning each subject must come from the instructors at the end of the semester or quarter. The grades are usually reported by the instructors by means of class lists, class cards, or class books. Class lists are simply lists of the students enrolled in each class, with provision for entering final grade and such other information as is desired. Class cards have already been described. Class books are bound books of pocket size, with provision for class lists and a daily record of grades or attendance, or both.

If the registrar's office is merely a recording agency for attendance reports, it may be that one final report by the instructors will be sufficient for the term. In many cases, however, more frequent reports are necessary, and Fig. 16 (Northwestern University) illustrates a suitable form for weekly records. If one symbol indicates absence and another tardiness, this form may be used to report both. Sometimes special class lists are furnished for this purpose, which can be turned in by the instructors and returned by the registrar weekly.

Printed transcripts are now commonly used for the transfer of credits from one college to another. The transcript is practically a copy of the permanent record, and is sometimes printed in similar

| Name                |          | Address          |                               | Parent or Guardian |                         | Fraternity |               | Date of Birth |        |        |
|---------------------|----------|------------------|-------------------------------|--------------------|-------------------------|------------|---------------|---------------|--------|--------|
| Entered College     | Class    | Degree Conferred | Address of Parent or Guardian |                    | Fraternity              |            | Date of Birth |               |        |        |
| Preparatory School  |          |                  | ENTRANCE                      | CUM LAUDE          | SUBJECT                 | MAJORS     | FRESHMAN      | SOPHOMORE     | JUNIOR | SENIOR |
|                     |          |                  |                               |                    |                         |            |               |               |        |        |
| Advanced Credit     |          |                  | Chemistry                     |                    | Astronomy               |            |               |               |        |        |
|                     |          |                  | English A                     |                    | Biology                 |            |               |               |        |        |
|                     |          |                  | English B                     |                    | Chemistry               |            |               |               |        |        |
|                     |          |                  | French A                      |                    | Economics               |            |               |               |        |        |
|                     |          |                  | French B                      |                    | English                 |            |               |               |        |        |
|                     |          |                  | German A                      |                    | French                  |            |               |               |        |        |
|                     |          |                  | German B                      |                    | Geology                 |            |               |               |        |        |
|                     |          |                  | Greek A                       |                    | German                  |            |               |               |        |        |
|                     |          |                  | Greek B                       |                    | Greek                   |            |               |               |        |        |
|                     |          |                  | Greek C                       |                    | History                 |            |               |               |        |        |
|                     |          |                  | Greek F                       |                    | International Relations |            |               |               |        |        |
|                     |          |                  | Greek H                       |                    | Latin                   |            |               |               |        |        |
|                     |          |                  | History A                     |                    | Mathematics             |            |               |               |        |        |
|                     |          |                  | History                       |                    | Music                   |            |               |               |        |        |
|                     |          |                  | Latin 1                       |                    | Oratorio                |            |               |               |        |        |
|                     |          |                  | Latin 2                       |                    | Philosophy              |            |               |               |        |        |
|                     |          |                  | Latin 3                       |                    | Physical Ed             |            |               |               |        |        |
|                     |          |                  | Latin 4                       |                    | Physics                 |            |               |               |        |        |
|                     |          |                  | Latin 5                       |                    | Political Science       |            |               |               |        |        |
|                     |          |                  | Mathematics A1                |                    | Public Reading          |            |               |               |        |        |
|                     |          |                  | Mathematics A2                |                    | Public Speaking         |            |               |               |        |        |
|                     |          |                  | Mathematics B                 |                    | Sec and Econ Hist       |            |               |               |        |        |
|                     |          |                  | Mathematics C                 |                    | Spanish                 |            |               |               |        |        |
|                     |          |                  | Mathematics D                 |                    |                         |            |               |               |        |        |
|                     |          |                  | Mathematics F                 |                    |                         |            |               |               |        |        |
|                     |          |                  | Physics                       |                    |                         |            |               |               |        |        |
|                     |          |                  | Spanish A                     |                    |                         |            |               |               |        |        |
|                     |          |                  |                               |                    | Delinquencies           |            |               |               |        |        |
| Entrance Conditions | Canceled |                  |                               |                    | Year Average            |            |               |               |        |        |
|                     |          |                  |                               |                    | General Average         |            |               |               |        |        |

FIG. 14. Permanent record, Amherst College. 10 x 6½ in.

## REPORT OF ABSENCES

Department \_\_\_\_\_

Week Ending \_\_\_\_\_, \_\_\_\_\_ Report of \_\_\_\_\_  
Month Date Instructor

[illegible]

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style. Safety paper is occasionally used, but if the rule is invariably followed that copies issued to students are to be made out on a special form or else marked "student's copy," and if transcripts are accepted only from other institutions and never from students, a good grade of bond paper should be satisfactory.

The advantages of a uniform transcript blank are obvious, and in 1915 the American Association of Collegiate Registrars adopted the form illustrated in Fig. 17; but neither this blank nor the uniform high-school certificate (Fig. 1) seems to have been very widely adopted by the colleges of the country.

Numerous other forms are used by the registrar or the dean, according to the size and organization of the institution. Among the most important are blanks to authorize changes in a student's official study list after the opening of the term, with the accompanying notice to instructors to admit or drop the student involved. A special fee should be charged for all such changes not instigated by the college authorities. The same blank may often be used to give permission to drop a subject during the year or to drop a student for failure or for excessive absence.

A report of grades is usually mailed to the student or to the parents after the close of each semester or quarter. A special application for degree is frequently required of seniors. Notices of various kinds are sent by the registrar or the dean to instructors or students. These miscellaneous records and forms vary so greatly in accordance with the needs of various institutions that specific recommendation is impossible.

When preparing information for the college catalogue and for various statistical reports, the registrar is called upon to assemble information from the student records. The number of men and women in each division may be required, or the number above a certain age or from a specified state. Some institutions use a special statistical blank, on which each student's name is listed, with columns for each item of statistical information. Data can be gathered from these sheets much more readily than from registration cards or permanent records. A few institutions have installed one of the various types of tabulating or sorting machines now on the market. A special punch records all desired information on cards by means of holes or slots. The machine then automatically selects the cards of all students belonging to any particular group desired.

While only incidentally a student record, the college catalogue is frequently prepared in the registrar's office and is of such importance as to require mention. The typical catalogue contains five chief divisions: (1) the title-page and table of contents; (2) information

# UNIVERSITY OF AKRON

## OFFICE OF THE REGISTRAR

### Official Transcript of the Record of.....

Address: .....

I. Attendance: Admitted ..... to .....

Attended—From.....19..... to.....19..... Graduated.....19..... Degree.....

II. Present status: .....

He She withdrew voluntarily, and is hereby granted an Honorable Dismissal.

The Dean may be addressed for information other than academic standing.

III. Entrance Units: From.....

| SUBJECT        | Units | SUBJECT         | Units | SUBJECT              | Units |
|----------------|-------|-----------------|-------|----------------------|-------|
| English        |       | Solid Geometry  |       | Biology              |       |
| Greek          |       | Trigonometry    |       | Music                |       |
| Latin          |       | Physics         |       | Drawing              |       |
| French         |       | Chemistry       |       | Manual Training      |       |
| German         |       | Botany          |       | Bookkeeping          |       |
| Spanish        |       | Zoology         |       | Stenography          |       |
| History        |       | Physiology      |       | Commercial Geography |       |
| Civics         |       | Physiography    |       | Domestic Science     |       |
| Algebra        |       | General Science |       | Typewriting          |       |
| Plane Geometry |       |                 |       | <b>TOTAL</b>         |       |

\*Entrance Examination required in this subject.

How admitted: .....

IV. College Credits: .....

| COURSES | Catalog Number | DESCRIPTIVE NAMES OF COURSES | FIRST SEMESTER |      |         | SECOND SEMESTER |                |      |
|---------|----------------|------------------------------|----------------|------|---------|-----------------|----------------|------|
|         |                |                              | Hours per Week |      | Credits | Credits         | Hours per Week |      |
|         |                |                              | Rec.           | Lab. |         |                 | Rec.           | Lab. |
|         |                | Year.....                    |                |      |         |                 |                |      |

Total number of credits secured..... Number of credits required for graduation.....

The records for each semester are for 18 weeks.

**Scale of Marking**

To September, 1923, except in Teachers' College where the new system was started in the Summer Session of 1923: E: 90-100%; G: 80-90%; F: 70-80%; P: 70%; Inc.: Incomplete; Con.: Condition; D: Failure.  
 From September, 1923:  
 A: 93-100%; B: 85-92%; C: 77-84%; D: 70-76%; Inc.: Incomplete; Con.: Condition; F: Failure.

This transcript issued ..... Registrar

FIG. 17. Transcript, University of Akron. 8½ x 11 in. Form adopted by the American Association of Collegiate Registrars

concerning the institution as a whole, including the calendar, organization, officers of administration and instruction, and general information; (3) a separate division for each college (of a university), containing subjects offered and general information; (4) a complete roster of students; (5) the index.

In making up the catalogue it is sometimes difficult to draw the line between excessive brevity and excessive fullness; in most cases a midway point will be found preferable to either extreme.

#### ALUMNI RECORDS

A special card for the use of the alumni secretary or for the registrar probably provides the simplest type of alumni record. Such cards should be made out by all seniors at the time application is made for degree or at such other time as is convenient. The information called for should include the vital statistics of the registration blank and the permanent record, with provision for the later addition of such matters as business connections, marriage, and family. Such a card is shown in Fig. 18 and Fig. 19 (The University of Chicago).

#### STUDENT ACCOUNTING

The term "student accounting," as here used, does not refer to accounting as ordinarily understood, but rather to the principles involved in determining the facts and figures which are to be entered on the records already described.

The first step involved is the evaluation of high-school or college credits presented by new students. Whether this task is intrusted to the registrar, to the examiner, to the dean, or to a special official or committee, the individual actually responsible should be fully acquainted with the many problems involved in such work and with the rules adopted by the institution regarding admissions. If freshmen are not admitted on certificate, the duties of this official will depend entirely on the method used. If certificates from accredited secondary schools are accepted, he should have access to the latest official lists of the various regional accrediting agencies and of the state educational authorities of all states from which students are ordinarily received. While students with high grades from non-accredited schools are sometimes admitted provisionally without examination, it is safer to require entrance examinations in such cases. In any event the registrar should be notified of preparatory credits accepted, that these may be entered on the permanent record.

|  |   |
|--|---|
| The University of Chicago<br>Office of the Recorder<br>GRADUATION CARD—THE SENIOR COLLEGES | Full Name _____   |
|  | (First Name) (Middle Name) (Last Name)  |
|  | Degree _____ Date of Convocation _____  |
|  | Leave these lines blank _____   |
|  | Future Address _____  |
|  | Name and permanent address of a friend through whom you may always be reached _____ |
|  | _____   |
|  | Future Occupation _____   |
|  | _____   |
|  | _____   |

MAKE ENTRIES ALSO ON THE OTHER SIDE

FIG. 18. Alumni card, University of Chicago. 5 x 3 in.

Date and place of birth \* \_\_\_\_\_  
 Religious denomination \_\_\_\_\_  
 Father's occupation \_\_\_\_\_  
 Father's full name \_\_\_\_\_  
 Mother's full maiden name \_\_\_\_\_  
 If either was a college graduate, } \_\_\_\_\_  
 specify and name the college } \_\_\_\_\_  
 \_\_\_\_\_  
 If you are married, so indicate; a } \_\_\_\_\_  
 woman will give husband's initials } \_\_\_\_\_  
 \_\_\_\_\_  
 Organizations in the University of which you are a } \_\_\_\_\_  
 member (Fraternity, Club, House, Sorority, etc.) } \_\_\_\_\_  
 \_\_\_\_\_  
 \*If of foreign birth, are you a naturalized \_\_\_\_\_ citizen of the U.S.?  
 If so, when and where naturalized? \_\_\_\_\_  
 \_\_\_\_\_

MAKE ENTRIES ALSO ON THE OTHER SIDE

P. Record Form 6G-2500-11-25

FIG. 19. Reverse side of Fig. 18

One of the most difficult problems for the director of admissions is the deserving student who does not fully meet the entrance requirements of the institution. If a student is admitted with less than the required fifteen or sixteen units he is conditioned, and these conditions must be made up within a specified time. While the custom of admitting students with conditions has been strongly condemned, it is still widely practiced. Where there is a secondary school near a college or connected with it, an able student may save a year's time by carrying a preparatory subject in connection with a lightened college schedule; but able students usually have no difficulty in presenting fifteen acceptable units, and the few exceptional cases should not be allowed to establish the rule.

A different problem is presented by the student who has the required fifteen or sixteen units *in acceptable subjects*, but without sufficient credit in some one subject to satisfy the particular subject requirements of the college. A common example is the student who lacks a year of foreign language or perhaps a half-year of mathematics, although he may have sixteen or even seventeen acceptable units. Strictly speaking, such cases do not represent conditions but subject deficiencies; and by taking extra college work in the subject involved (for which credit is given as an elective), such deficiencies may be corrected without increasing the number of hours required for graduation.

Somewhat similar to the task of evaluating high-school certificates is that of evaluating transcripts from other colleges. In the case of accredited institutions, credits are ordinarily transferred at face value, unless grades are unusually low or curricular requirements are involved. In the case of students from nonaccredited institutions, each case is ordinarily considered separately and decided on its individual merits. Sometimes full credit is given, sometimes partial credit, and sometimes no credit except after special examination.

The units in which college credit is expressed vary, the most widely used being the semester hour and the quarter hour. The designation "term hour" may be equivalent to either or to neither, according to the length of the term. The academic year ordinarily consists of 36 weeks, divided into either two semesters of 18 weeks each or three quarters (or terms) of 12 weeks each. The semester hour represents one hour of recitation or lecture per week for one semester; the quarter hour the same for one quarter. Two hours of laboratory work are usually considered equivalent to one hour of recitation or lecture, although some institutions require three. Standard graduation requirements are 120 semester hours or 180 quarter hours, although many

institutions require more. These two units may be readily interchanged by the three-to-two ratio, as three quarter hours are equivalent to two semester hours. In institutions operating on the four-quarter plan a year's work is given in three quarters, the summer quarter of twelve weeks corresponding to the summer sessions of other institutions so far as credit is concerned.

The use of majors for units of credit is illustrated by The University of Chicago, where a major is equivalent to five quarter hours.

In addition to the quantitative requirements for graduation many institutions also prescribe qualitative requirements, frequently expressed in quality points. A typical example where D is the lowest passing grade is to allow three points for each hour of A, two points for each hour of B, one point for each hour of C, and nothing for D. The student must present quality points equal to at least 1.1 times the number of hours. Thus, a student offering 130 semester hours would be required to have at least 143 quality points. This system prevents graduation on uniformly low-grade work. Many institutions achieve the same result by limiting the number of hours of D-grade work that will be accepted, or by requiring a general average of C.

A few institutions give extra credit for high grades. For instance, one state university allows 20 per cent extra credit for each hour of A work and 10 per cent extra for each hour of B work. While the underlying principle has considerable merit, the plan has not been very widely adopted, possibly because no system of grading has as yet been devised which can be guaranteed to give uniform results when applied by different instructors and to different groups of students.

The percentage scale for grading, which was formerly almost universal, has been largely superseded by various letter systems, usually with percentage equivalents. The most important point to note in any system is the lowest passing grade, usually 60 per cent or 70 per cent. Owing to the wide variations in grades given by different instructors many colleges are now relating the grading system to the curve of normal distribution. When carried to the extreme this system requires that a fixed proportion of each class be assigned each grade in the scale. With a scale of five points the theoretical curve calls for 7 per cent A's, 24 per cent B's, 38 per cent C's, 24 per cent D's, and 7 per cent E's. A number of variations of the theoretical curve are used by different institutions, usually with certain deviation from the normal allowed. A common form changes the five divisions to 5 per cent, 20 per cent, 50 per cent, 20 per cent, and 5 per cent. While the general plan has merits, it should not be carried to the extreme, especially with upper classmen and elective subjects.

Some educators favor the pass-fail system, where no grades are given, but students are either passed or failed. This idea has not been adopted very widely except in graduate schools, where it operates very satisfactorily.

The enforcing of regular attendance is a problem which is met in various ways, usually by some form of penalty. In some cases all responsibility rests with the instructor, who has authority to lower at will either the grade or the credit granted. Some institutions deduct a definite fraction of an hour credit for each absence or tardiness, while many drop the student from class when absence has become excessive. The particular method matters little if the result is achieved.

Students are also frequently eliminated from class before the end of the term because of failing grades. The initiative is usually taken by the instructor, but sometimes by the dean, and the registrar changes the records accordingly.

While much of the work involved in recording a student's college work is routine in nature, many points come up for decision which the layman would never suspect. A wider knowledge of the registrar's problems on the part of other members of the faculty would aid in securing that coöperation which is essential to smooth administration.

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## CHAPTER XVI

### THE PERSONNEL DEPARTMENT

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#### WHAT PERSONNEL WORK IS

Our colleges and universities are in process of growth and transformation. Our entire educational system, for that matter, is in transition. If our universities are not all that we might desire today, let us recollect that fifty years ago we had practically no universities. The present collegiate system is a recent development, has not attained its full growth, and is not likely to settle into fixed form for at least a century to come. We shall maintain, provided we are really liberal and adaptable, an experimental attitude toward our whole collegiate program. What is most needed is not the acid criticism that etches our imperfections but the constructive criticism that will enable us to direct a movement, already under way, toward a generally satisfactory culmination.

Personnel work is to be counted among the constructive agencies of contemporary university administration. It is wholly pragmatic in conception and in operation. It is committed to no educational dogma, bound by no special methodology. It confronts the concrete situation in a wholly experimental attitude, seeking to effect an improvement here, to try a measure there, in the belief that the soundest evolution proceeds step by step toward a goal never completely foreseen. The man does not live who can point infallibly the direction that our educational development ought to take, nor does one live who can assimilate to a single association system the multiple facts and forces of the present educational situation. Rationalism fails us. We cannot set a goal and drive toward it with any assurance that it is what we really want. "Muddling through" may not be a graceful process, but it is often the sensible one, provided we muddle earnestly enough and with the determination to make each step secure before the next is taken. Some logician of the future will explicate the technique of this process, and perhaps we shall then see in it the very essence of the evolutionary movement itself.

Personnel research, as the name implies, approaches the problems of university administration by way of the institution's personnel, — all of its personnel, if you please, faculty and trustees included. It is especially directed, of course, to the student, not because of any sentimental regard for the student *as* student, not because of any strong urge to uplift the downtrodden or to stay the rod of discipline, but precisely because the study of the contemporary situation from the point of view of the student is a natural and necessary preliminary to any practical attempt at constructive experimentation. A university has many duties and obligations, but its first duty is to consider the student and his needs.

The university must carry on research, preserve the best traditions of the race, and perform various services for the community ; but its chief business, after all, is to teach students. Acquaintance with the student body — with its acquisitions, interests, and capacities — is necessary if we are to conduct our teaching intelligently. Personnel research, therefore, provides orientation which cannot be secured by any other means.

We have spoken first of personnel research because we have had in mind the development of our educational program, looking toward more intelligent and more effectual collegiate administration. But there are also the tasks of today, — the work to be done under existing conditions and handicaps. We may distinguish in our personnel department between research and what, for lack of a better name, we may call service. Under *research* may be included all studies that aim to interpret the student to the faculty, all tests of scientific instruments for the analysis of individuals and groups, all efforts to improve human relationships by the use of systematic methods, — in short, all that pertains to the acquisition of data in the personnel field, and everything that has to do with the improvement of personnel study in its scientific aspects. Under the head of *service* we may include everything that has to do with making the facilities and resources of the university available to the individual student in accordance with his peculiar needs. The work of coördination does not end with this task ; one of the great duties of the department is to secure effectual coöperation throughout the personnel of the university, with a view to the promotion of the objectives to which the institution is dedicated.

#### QUALIFICATIONS OF THE PERSONNEL WORKER

Before taking up the discussion of research and its implications there is one point that ought to be cleared up. There is no such thing as a personnel expert, if by that term is meant a person possessing a

specialized and peculiar scientific knowledge of human nature. Human nature is interpreted to us by several sciences, in its individual and social and biological aspects, but there is no single aspect of human nature marked out to be the peculiar subject matter of a science of personnel. Personnel work, although it originated in psychology, is more than psychological, since in its scientific enterprises it depends upon several of the social sciences directly and upon other sciences indirectly. Perhaps what appears the correct point of view in this matter can be expressed best by specifying what would seem to be ideal qualification for a university director of personnel. He should, first of all, know the academic field thoroughly. This means that he should be a student and a teacher, with a broad range of interests. The mere specialist, even the psychological specialist, will not do. Again, he should know the social sciences, — should preferably be trained in one of them. Psychological training is of course ideal, provided it be not of the narrow-gauge variety. Concretely this means that the man should know the uses of general, abnormal, and differential psychology, understand the methods of sociology, anthropology, and subjects of like nature, be in touch with modern educational methods and practices, and have some knowledge of physical culture and mental and physical hygiene. He should know especially the methods of the social sciences, and know when and where they may be utilized. In the next place, he should have enough of that synthetic turn of mind that we call philosophical to be able to bring his practical and scientific knowledge to a focus upon the tasks which confront him. He is to be, in knowledge and in practice, a coördinator, a bringer-of-things-together. These are the important specifications, but perhaps one more at least ought to be added. The director of personnel should know his students, — know their minds, their ways, their problems, their language. How else could he keep in line with the common-sense (as distinct from the scientific) requirements of his work?

In the sense thus indicated, then, the personnel worker should be a scientist. His research, so far as it is directed to studies of a purely scientific nature, will have to do with tests, examinations, interviewing methods, diagnoses, statistical devices, and the like, the object being to create new instruments or to experiment with old ones. Perhaps mental tests have attracted the attention and excited the wit of our brethren more than any other of our devices, unless it is the questionnaire. There are some who seem to believe that personnel work is a program of testing and quizzing, and little more. Anybody who is at all conversant with the facts knows that such devices have their values,

and knows also that they have distinct limitations. The personnel worker will utilize them to whatever extent he finds practicable, but it is certain that they will have a minor part in his program; for, much as we might desire to weigh and measure people, to discover their peculiar traits, bents, and dispositions by a psychological technique, the fact is that such instruments of analysis as we possess at present are not searching enough and not reliable enough to carry us very far. Many of them, for other reasons, would not fit into a personnel program. Certainly among personnel workers emphasis on psychological analysis will vary according to individual inclination, but on the whole it probably occupies, at present, a distinctly secondary place in personnel practice.

### RESEARCH

1. *Gathering data.* The personnel worker will emphasize at all times, on the side of research, the business of gathering and assimilating facts, to the end that he may acquaint faculty and administration with significant data respecting the student body. In one study figures were gathered to show how grades reported at mid-semester compare with grades received at the end of the semester. Does the man who receives F in November necessarily receive F when the final grades are in? This little study was made for a committee that was considering what its policy should be with regard to excluding students whose mid-semester reports showed them below par. The instance is cited as typical of dozens of studies that are undertaken. It will be seen that fact-gathering of this type may have a direct relationship to administrative practice.

Suppose that we take for our study the entire entering class of a university, and obtain, in objective terms, the clearest picture of the class that facilities permit. Let us know where these people come from, from what cities and high schools, from what cultural background. Let us be informed about their scholastic records in the fullest possible detail; let us know their interests and ambitions, so far as they are definite. Let us collect and plot and analyze every scrap of data that can be gathered. Suppose, further, that this class be followed through four years of college. Let us see who drops out and, if possible, why; who selects this school or that; who gets honors and who is excluded. Let us keep track of all activities engaged in, all studies elected, all significant facts regarding finance, health, and social fortune or misfortune. Suppose that the same exhaustive study (always in objective terms, free from this individual's opinion or that person's bias)

be made of each succeeding class. Carry the fact-finding, if possible, into the years after college, and discover what fortunes these people have in the world of affairs. Would such a purely factual and statistical study be sufficiently valuable to justify the cost in time and labor that it would involve?

2. *Use of data.* More than once the answer has been "No"; but it is a short-sighted answer, based on the old dictum that figures lie. Any such study as has been suggested is liable to misinterpretation and misuse. There are, for instance, men in educational circles who would seem to believe that any adequate description of what exists constitutes grounds for its sanctification and perpetuation. But, wisely used, data of the kind suggested would provide interesting information of [a degree of reliability that no individual or group, relying upon limited contacts and circumscribed impressions, could hope to duplicate.

Such information would be essential in any program looking to the selection of students for admission. It would be illuminating with respect to the handling of freshman classes and in connection with the management of curricula. It would be valuable to advisers, enlightening to faculty and trustee committees, and serviceable to administrators. Simple and fundamental facts, properly gathered and presented, are often more illuminating than our more complicated compilation of data. Such a program of fact-gathering as has been suggested, then, might be of the highest value, provided the university concerned really desired the orientation made possible by its means, provided it cared more for the welfare of the student and for his development than it cared for advertising, publications, traditions, or the standards set by Oxford or Leipzig.

But there are other studies to be made, many of them in connection with special activities and programs. Committees facing problems, administrators in the course of their executive work, councils in the consideration of policies or of ways and means, frequently need information of a kind that is not immediately available. Let it be a part of the work of a personnel department to secure such data, so that the activities of the university may be expedited and made more conformable to actual circumstances and needs. It should be understood that work of this kind is expensive, and that where it is introduced on an experimental basis there is likely to be a considerable waste of time and labor. But as our work progresses we find ourselves economizing greatly in time and expense by the perfection of better systems of record and tabulation, and by the elimination of waste effort.

## SERVICE

So much for our research in personnel. Let us now turn to what we call *service*. Most of our activities come under this head, research holding a distinctly secondary place. Under service we may distinguish, as general phases of procedure, (1) selection, (2) orientation, (3) adjustment, and (4) placement.

1. *Selection*. The business of selecting students for admission to college involves many factors that lie beyond the control of a personnel department. The extent to which any particular college ought to limit its registration, for instance, depends upon its objectives in relation to the community, upon the abundance of its resources and facilities, and upon its philosophy of education. These wider considerations merit much more careful study than they commonly receive. There is too much following of tradition, too much imitation, too much taking of things for granted. I do not mean to belittle established forms. Tradition is important, in so far as it rests upon proved values. The college cannot lightly follow the whims of the community, nor can it at any time forsake proved methods in favor of proposals whose only virtue is their novelty. What is needed is an extensive, impersonal survey of the relationships actually obtaining between college and community, based on facts rather than on assumptions, having as its purpose to determine how, under the circumstances actually existing, the college can best perform its peculiar functions as the guardian of the culture of the past, the promoter of science and research, and the educator of the youth of the territory which it serves. Any such inquiry, to be of value, must consider the specific institution in the specific situation. General ideas without concrete reference are void.

As matters now stand, we find a dearth of systematic study of the kind suggested. Among the numerous critics of the American college you will be lucky to find one who can prescribe a definite program for a particular college with specific environment and endowment. In actual practice we find that attendance at the typical American college is limited, as one might expect, by factors wholly concrete and mundane. The privately endowed institution usually limits its attendance when its facilities are exhausted, and thereafter is likely to boast of its high standards and impeccable ideals. The state university exhausts its facilities and asks the state legislature for more funds. Among the few colleges that limit attendance more than is made necessary by an actual crowding of classes and buildings, it will be found that promotional policies and diplomatic considerations of various sorts are

usually more potent than is a philosophy of education based upon careful study of the institution's duties and resources.

Most of the factors that determine attendance, then, lie beyond the scope of a personnel office, and yet the personnel department is at present one of the main collegiate agencies interested in placing the selection of entrants upon a sound factual basis. Is it true that a student who does good work in high school will do good work in college? If so, what exceptions occur? What is the real value of entrance examinations, as tested by actual performance? What is the selective value of mental tests or of achievement tests? What part does vocational interest play in determining scholarship? How can students of sound character be distinguished from those of unsound character? Such questions can be answered only by an appeal to facts and performances. There is much to be done in this field. New methods of getting the facts must be found, while at the same time the best methods available are employed in the immediate work of selection. The need for such inquiries is obvious. If at times our personnel procedure seems crude and our admission forms unnecessarily trivial, one may at least retort that such methods are superior to those employed by administrators who judge the characters and capacities of candidates by how they dot their *i*'s and cross their *t*'s, by their fathers' political preferences, or by the way they shake hands. Try as we will, we cannot escape the responsibility of passing judgment upon our candidates. Let us at least base our judgments upon objective data so far as possible, and fight free from bias and prejudice.

2. *Orientation.* When the selection of entrants has been made, there follows the whole complicated process of proper induction into college. We are making some progress at this point. Many colleges have elaborate programs designed for freshmen. These at least give the beginner an extra week in which to find his way about before he is required to get down to study, and perhaps the advice and admonition supplied gratis on these programs is not without utility. But this is only the beginning of orientation work. The period of entrance to college involves a psychological crisis in the lives of many young people, which is often complicated by financial, social, or family difficulties. Of all orientation problems, however, that which ought to concern us most (though it usually does not) is that of educational adjustment. Under our present system educational advice and counsel is impossible in most institutions. No honest educator can look this situation squarely in the eye without blushing.

Perhaps something should be said at this point about vocational counsel, which is of course directly associated with educational counsel.



Only a few students, as a matter of fact, have decided before entering college what vocations they will pursue. A large proportion even of liberal arts seniors do not know what they are to do. This condition of affairs is regarded by some as lamentable, — as, in fact, highly deplorable, — and there are strong movements afoot to provide our wandering ones with suitable objectives.

Some, indeed, would insist that we ought to have experts measure and analyze our children in the nursery, determine their peculiar abilities and talents, and prescribe for each a course of training leading straight toward the ultimate vocation. Others, scarcely less enthusiastic, would set the grade school, the high school, or the freshman year in college as the period of vocational counsel and choice. Whatever may be the virtue of these several programs, they are nevertheless psychologically insecure. There are the Seashore tests of musical ability, to be sure. Would that we had more tests as scientifically secure! But, alas, we have only a few others, and have no great confidence in them. The time has not yet arrived when we can analyze a human being and thereby judge whether he is suited to be a lawyer, a bricklayer, an inventor, or a steeple jack.

We cannot set the distant goal, as we might like to do, and aim at it consistently. There is nothing left but the slow process of year-by-year individual development, tentative and experimental at every stage. At most we can do no more than guide this process as wisely as may be under the limits of our present knowledge. Let information be made available; let each step be carefully considered; let the ground be nourished and the plants be watered. Growth must come from within, as is the custom among organic things, and we must content ourselves with being good gardeners.

Vocational counsel cannot at present be given on any scientific or systematic basis. It follows, accordingly, that we cannot give educational advice from the vocational point of view unless, as is rare, the student knows definitely what he is to do. We should seek to discover, however, in the case of each student, what are his present tendencies and interests, and to provide for him such studies as seem to meet his intellectual needs at the time. Here we come upon a fundamental difficulty, for this whole notion of individual development runs counter to our present régime of standardized curricula and requirements. And we impose our fixed requirements on the freshman, who is of all students least fitted to endure them! The student entering college confronts a complex curriculum with a minimum of information on which to base his selections. What school? What degree? What major? These immediately practical questions cannot be met with

any confidence by the uninstructed freshman. So much in our contemporary system would seem to suggest that the welfare of the individual student was the last consideration of those who fashioned our collegiate edifice. Something ought to be done about it. In the meantime let us at least try to know our students, their circumstances, their interests, and their ambitions, and guide them through the mazes of our educational system as wisely as means permit. The personnel department can coöperate here. Practically, a great deal can be done to make the freshman's advisory consultation more significant and helpful.

3. *Adjustment.* Once the student is registered he has before him the problem of leading a modern collegiate life and at the same time conforming to the standards of intellectual performance required of him by the faculty. Those of us who are disposed to be bluntly honest will admit that he faces a difficult task. In this situation there is only one safe principle of orientation. The student ought to develop in wisdom and knowledge; if he does not, the chief objective of education is defeated. Accordingly, in any consideration affecting the adjustment of the student to college life, our first questions must be, How is he getting along in his studies? If he is laggard, what can be done to help him along? He may need to have his tonsils removed; he may need a better job; he may need to change his residence or associations; he may need to settle his love affairs; or perhaps he ought to stop trying to conduct *all* the political affairs of the campus and confine himself to the annual circus. Many and varied are the handicaps under which students labor, and many and complex are the causes of poor scholastic performance.

As a basis of contacts for adjustment work we suggest personal interviews. All freshmen should be interviewed. Sophomores may be included, and even upper classmen. The interviewing staff may be made up of young people, mostly recent graduates, who know the college and know college students. They are able to gain the confidence of those interviewed and are quick to understand their difficulties. Interviewers should not assume an attitude of paternalism or exhibit a desire to scold, inspire, or sentimentalize; nor should they, on the contrary, impose upon students with standardized advice or pseudo-scientific hocus-pocus. The interviews should be largely informal, and the chief aim should be to make available to the particular student all the facilities of the university in accordance with his special needs. Resources should be available in the medical and physical-education departments, in the mental clinic and its psychological staff, in the employment offices, in the offices of the deans of men and women, in

loan funds and scholarships, and in social and religious organizations. These should be brought to a focus upon the individual case. It is a *liaison* job, nothing else. The aim is to discover whether there is any concrete, definite thing that can be done for the student interviewed, to promote his satisfaction and well-being, to the end of aiding his educational development. If there is anything that can be done then and there, do it; if there is anything that can be accomplished through a special agency refer him to that agency and make the appointment for him. If there is *nothing* to be done, give the student your blessing and apologize for wasting his time.

The majority of students will be found to be healthy, contented, and prospering as well as might be expected. All freshmen, however, should be interviewed, in order to find the exceptional cases. Sophomores and juniors should be interviewed only in case we have reason to believe that they have need of our services. The system should not be mechanical; methods should be varied to suit the case; and interviewers should try at all times to maintain a fair and aboveboard relationship to the student body, having an eye to matters of taste and form.

### EXTRACURRICULAR ACTIVITIES

At this point it may be worth while to add a statement in regard to extracurricular activities and such agencies as affect the student's other-than-intellectual development. Alumni are often said to advise students that more is to be gained through participation in campus activities than through the work of the classroom. These utterances perhaps exaggerate the conviction, widely held, that campus life affords personality training of a high order of merit. Even faculty men share in the opinion. Only here and there do you find a voice raised in opposition to the general verdict. It is clear that few can really know whereof they speak. And one can only wonder that a work so significant and important should remain outside the purview of faculty and administration, except where regulation is demanded in the interests of order and civil policy.

Who really knows with what effectiveness our campus activities operate in the development of personal traits? Who can say with assurance that under existing conditions our political, social, athletic, dramatic, and publications activities accomplish, on the whole, more good than harm for students who engage in them? They have not been properly surveyed and estimated. Nobody has compassed the field, and passed judgment after an exhaustive study of the pertinent facts. Here again, where so much is at stake, reliable information

should be accumulated. What would come of careful tabulation of facts and careful correlation of studies, cannot be predicted. At least we should know what is going on, what students participate, how these students get on in their studies, and ultimately what sorts of careers they choose and how they prosper in them. The writer is inclined to believe that a great many campus activities are more hurtful than helpful. But this is only a belief. Let us have the facts.

The whole problem of personality development, now being widely discussed, is really deserving of serious consideration by college administrators. It is true that we have no method of personality analysis that is known to be reliable. It is true that the whole field of personality analysis is at present overrun with cranks. But we might at least ask, Are we at present utilizing such resources as we find actually available in the development of personality and in the correction of personality defects? Such obvious things as speech, diction, and posture can be objectively rated and are susceptible of correction. Psychology has something to offer in the way of diagnosis and of corrective measures. We must go carefully here. Students can be given information—psychological, sociological, industrial, and political—which should help them to comprehend better the nature of social adjustment and its demands upon the individual. Such resources and such knowledge as we do have might profitably be pooled in the formation of a practical program of personality development. Fifty years ago nobody could have proposed such a step. But times have changed; society is more complex and more difficult, personal relationships more perplexed, and poise harder to maintain. We ought to consider seriously the other-than-intellectual development of our students, and have in mind the preparation of a form of collegiate training that will be genuinely sound and helpful on the personal side. Let us survey the efficiency of our campus activities, consider what resources we have actually at hand that are dependable, and work our way toward an improved program of personality development.

4. *Placement.* The fourth phase of personnel work has to do with *placement*. This means, roughly, finding suitable jobs for college graduates. It is only within recent years that the older colleges have been willing to consider placement in relation to the business world. We have been finding jobs for teachers, positions for our young Ph. D.'s, and leads for our professional-school graduates. A number of schools of commerce have had employment offices; but since the war the whole system of placement has developed on a considerable scale. The great corporations of the industrial world have established regular methods for employing and training college graduates. Contact be-

tween the colleges and the business world is growing closer. What this movement portends, or what its effects may be upon the colleges, is difficult to say. Certainly the college would be in error were it to fail to take cognizance of the movement and let it drift at random. That course of procedure, as we recognize in the case of athletics, is diplomatically unsound.

A serious question is whether, under close coöperation between the colleges and industry, there might not be an unfavorable reaction upon liberal education, as well as upon professional training, as the result of a demand for the teaching of subjects of immediate utility. For the present that danger is small, since many employers of college graduates are inclined to favor the culturally trained man; or perhaps it would be fairer to say that the industrial employer is more likely to be interested in the man than in his specific training. Certainly, in many industrial situations traits of character play a large rôle, intellectual ability taking second rank.

Whatever is to be done about it ultimately, it is certain that our colleges have the placement program before them; they may let the movement develop independently, or they may direct it as carefully as they know how. The personnel office should not become an employment bureau; it should remain independent of all direct employment work; for the function of personnel work is not of the specific kind involved in placement, but is, with respect to such undertakings, that of *liaison* between the individual and the agencies through which he bargains for employment. The first task of the personnel office is to know the men who are graduating, to know their training and their interests, and to recommend them for this or that type of work in accordance with their wishes. The second task is to make sure that the jobs offered or accepted are really as described and afford graduates the opportunities which they want. Through the medium of the personnel office, employment work may be kept in line with the general policy of the institution. It is likely to be otherwise where the employment office operates in isolation from other departments.

#### SUMMARY

Throughout this discussion one idea has been stressed, — the function of the personnel department in coördinating the institution's activities. If it were just one more department, placed among others and mechanically related to a mechanical system, it could scarcely hope to accomplish its principal aim; but if the function of the department is recognized, and it is given a central position in the administration,

from which it can operate effectually, it will be found that it can be in the highest degree helpful in the solution of such general problems as those cited. Personnel work should either be undertaken seriously, on the scale that is merited by the nature of its purposes, or not undertaken at all. In incompetent hands it is more likely to be a nuisance than a benefit, and even a competent worker, handicapped by lack of means, will find himself ineffectual and probably misunderstood. Finally, the personnel department can succeed in its work only to the extent that it receives coöperation from all other departments and comes to be accepted as a vital and necessary part of the university administration.

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## CHAPTER XVII

### IMPROVEMENT OF UNIVERSITY INSTRUCTION THROUGH EDUCATIONAL RESEARCH

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College curricula and instruction are today the subject of much concern. In the camps of both the friends and the enemies of education criticism prevails. It comes from college teachers and administrators, from students and parents, and from the general public,—journalists, social philosophers, and taxpayers. In many respects this uneasiness of the common mind concerning the most ambitious of modern social institutions is a favorable symptom. It indicates that the college really matters; it is no longer negligible. Out of the prevailing solicitude there may come a new understanding of what the college can and should do.

#### CHARACTER OF THE COLLEGE PROBLEM

Since this discussion will deal with some of the vexed problems in college teaching, it may be well, by way of preface, to state the writer's view that much of this prevailing criticism is ill-founded. He does not find any conclusive evidence to show, as many of the critics would have us believe, that college instruction has deteriorated or that the percentage of poor college teachers is any greater than it was fifty or a hundred years ago. Nor is he assured that the machinery of English and Continental education, with the severe limitations of educational opportunity that seem their necessary corollary, can be transplanted into the American college, as others contend, without a definite surrender of important values. The present-day American college is asked to meet the needs of a newly created society. To do so it must create its own measure of educational values and achieve its own standards. Teaching in the American college must be judged by its adequacy to meet all the demands of American youth for higher training. It must set the highest possible useful standards for the most gifted; it cannot neglect the moderately endowed whose economic and intellectual status enables them to profit by some training



beyond the point of high-school graduation. The effective college is one which performs its total teaching task adequately. It must account for its neglects as well as for its successes. Much of the expressed discouragement with the American college arises from the failure to accept this educational philosophy, and from the attempt to apply to our educational endeavors criteria that arise from an old-world social philosophy. It is therefore abortive and futile.

In thus brushing aside ill-considered criticism we do not intend to justify the present-day college in all its procedures. There is pressing need, for instance, for the clarification of the aims of the college curriculum. Faculties, students, and the public are in bewilderment here, and all are the victims of economic and social forces which we only partly understand. Like confusion prevails in regard to teaching methods. We are of many minds about all these and other matters, and the effectiveness of the college is much reduced because those in authority speak with different tongues concerning them.

It is the writer's belief that as yet we know too little about what constitutes good college teaching to be cavalier in our criticisms. We may easily maintain the thesis that there is no single measure of good college instruction; the total college situation is such as to demand differential techniques and standards to meet varying student needs and variable curricular content. For this reason any generalized statement about college teaching can be shown to be false and inadequate if interpreted as universally applicable. Good college instruction for one subject or level of advancement may be bad college teaching if carried over to another field or to the more mature student years. A good teacher of freshmen may be, and is likely to be, a poor teacher in a professional school. The reverse condition doubtless also obtains. The adequate description of good college teaching must be based upon a differential analysis of the diverse teaching problems presented by the complicated intellectual factors implicit in the college curriculum and by the diverse capacities of college students. In one situation the problem is one of intellectual stimulation; in another it is educational guidance and selection; in still another it is social and personality adjustment. All these problems are shot through with variables that are only vaguely understood and that have never been experimentally explored.

#### ELEMENTARY-SCHOOL TECHNIQUES NOT APPLICABLE

The endeavor to improve college teaching should not fall a prey to the easy assumption that elementary-school techniques are applicable to the college field. Those of us who are familiar with the development

of the scholarly study of education and the professional training of teachers are aware that the elementary school was the first place for such inquiries, and they have made much more progress there than elsewhere. It was in the natural order of events that they should proceed to the level of secondary education, where their usefulness is now sufficiently recognized to warrant requirements in training as a basis for the certification of teachers. It is by no means clear that we have an equally valid offering for the training of college teachers. Yet in some quarters there appears a tendency to make use of elementary-school methods and the machinery of elementary-school supervision for this purpose.

This procedure, in the view of the present writer, is more likely to retard than to promote instructional improvement in college. College teachers cannot be trained by the methods and materials suitable to the earlier stages of school life. There is a sufficient uniqueness in the nature of the intellect and personality of college students, in the materials of instruction in college subjects, in the abilities and orientation of college teachers, and in the whole regimen of college organization and student life to constitute the problems of college education a unique body of situations.

The clarification of this particular issue becomes immediately important because of the apparent tendency to require professional training for college teachers. The North Central Association of Colleges and Secondary Schools has recently been urged to adopt such a requirement. It viewed the present situation as inopportune for coercive measures, but took action that may in the future lead to definite requirements. In the meantime the public junior colleges are being brought under the centralized control of state departments of education, and the qualifications of teachers are being prescribed. It is inevitable, as this process goes forward, that the certification standards for high-school teachers shall be pushed upward to include the junior-college field, and this tendency is already an accomplished fact in some states, notably in California, Kansas, and Minnesota.

The desirable curricular content in education courses necessary to make such a requirement helpful to college teaching is still in need of study. In our consideration of the matter there should be a clear understanding that prescribed professional training should have a definite bearing upon college teaching. Only materials that are pertinent to the problems which college teachers meet can with justice be included in a minimum course for the training of college instructors. In so far as educational science can offer direct aid to college teachers it may legitimately ask for recognition.

## RESEARCH NEEDED

These considerations lead to our first principle for the improvement of college teaching. It is this: Any thoroughgoing attempt at the improvement of college instruction must be founded upon a program of research rather than upon didactics. We really know too little in a scientific way about college education to be dogmatic upon many matters connected with it. Ask yourself any of the obvious questions in college teaching. Is the lecture an effective method of instruction? Is it superior to the recitation? How essential is the laboratory in teaching zoölogy? Are large classes inimical to student achievement? What are the nature and function of a prerequisite course or curriculum? Multiply this list ad infinitum and then ask yourself what facts are available by way of answer, and you will be astonished at the paucity of dependable data. Search the educational journals, the official publications of national societies, the transactions of college and university associations, and only occasionally will you discover a scientifically substantiated fact amid the wilderness of stoutly defended opinion and wholly unverified hypotheses.

The writer has recently examined the published proceedings of the Association of American Universities, which presumably represents the discussion of university education at its best. In the first twenty-six years of its activity (1900-1926 this organization listed one hundred and thirty-four papers, chiefly from its own membership. Forty-eight of these papers dealt with problems of curricula and instruction. Many of them are brilliantly written and are a pleasure to read. Ask the crucial question, however, What scientifically verified facts does the writer present in support of his thesis? and you experience a feeling of indelicacy and rudeness in your own interrogation. Just seventeen of the forty-eight papers present factual data for consideration. Yet the query for such supporting evidence is the inescapable question which we must now ask if we propose seriously to attack the problem of improving college instruction. And we must go from it to the sequential query, which is this: In the absence of facts, how shall we set about their discovery? To the latter question science in general has devoted major attention, and it must always be so as we make excursions into unexplored fields of thought. Seriously to ask these questions in connection with the improvement of college instruction is to imply the machinery of scientific study and a lengthening program of educational research. To advocate such a program is therefore the primary intention of the present discussion.

## RESEARCH NECESSARILY COÖPERATIVE

A program of effective research in college instruction must be a coöperative affair, involving, on the one hand, instructors in subject matter, and, on the other hand, persons trained in the techniques of educational investigation. In problems having to do with college curricula, with college instruction, and, to a considerable extent, with student personnel, hope for improvement lies in the active interest of the teaching faculty. Nobody can improve instruction in science, for instance, except the instructors in science. It is usually true, however, that such instructors are untrained in the methods of accurately evaluating their own work as teachers, and their personal judgments are no more to be trusted about the virtue of their own activities than are those of other intelligent men. The instructor's deficiency in this matter must be supplemented by the technical skill of someone trained in the techniques of educational investigation. The educational expert, on the other hand, is too little proficient in the content of a particular subject to be of much assistance in showing didactically proper methods of teaching. He needs the teacher of subject matter to provide him the situations to which he may apply his scientific techniques.

We have not as yet any very satisfactory method for the evaluation of teaching skill in the college field. It is hardly possible, for instance, to describe in standard and objective terms the best kind of college teacher. We do not know enough about college teaching to do this. It seems easy enough to recognize a very bad and wasteful recitation period, and possibly also an exceptionally good one. Most class exercises are neither of these, and in the border-line cases we are hopeless in giving any exact evaluation to the effectiveness of what goes on during a class. All of us can cite teachers who secured a ready response from students in our college days, but whose work left no lasting impression upon us. We also know instructors who would rank low in any scale for the formal evaluation of instruction, but whose teaching bore marvelous fruitage ten, fifteen, or twenty years later.

It has often occurred to the writer that three of the best teachers he has known violated repeatedly every known standard of recitation procedure. Their power lay in a form of intellectual stimulation that transcends the technical rules of pedagogy. Until we know vastly more about the basic principles of effective instruction at the college level than we know now, the problem of improving instruction will remain a matter for investigation and not a matter of didactics. Any thoroughgoing program of improving college instruction, therefore,

must lay the primary responsibility for such improvement upon the coöperation of teachers of subject matter and the trained investigator of educational problems. All that the science of education or that men in education can do is to assist interested teachers in devising means of studying their own work and perchance of improving it. Education can supply the technical methods of research to a teacher of French or a teacher of chemistry who wishes to investigate the problems arising in his own teaching. The two working together can provide both the essential activity to be studied and the technical means for its investigation, and in this coöperative endeavor lies the hope for substantial progress in the field.

There is a further reason, in a program of research for the improvement of college instruction, for placing the responsibility at once upon the teachers of subject matter. In general, college teachers have a naïve attitude toward their own performance and are unlikely to exercise a critical attitude toward their own teaching procedures. The induction of this critical attitude in an instructor is one of the first and most essential elements in providing the proper attitude toward the improvement of his work. The experimental study of one's teaching problems tends to generate just this attitude, and he becomes far more critical toward his traditional assumptions and cherished prejudices when he submits them to an objective evaluation by scientific method.

The generation of this attitude on the part of college teachers is probably the most difficult and yet at the same time the most important immediate achievement to be secured in the study of college problems. Any instructor who submits his own methods to study and investigation develops during the course of the process a new attitude toward his work. Nothing lies so fundamentally at the basis of the improvement of college instruction as this alteration of the usual and traditional outlook of the college faculty upon the problems of teaching.

### IMPROVING MARKING TECHNIQUES

Coming to specific matters, we may say that there can be little effective study of college teaching and little intentional improvement in it until we discard the present marking system, or supplement it with corrective devices that render it intelligible. More than twenty years ago it was clearly demonstrated that the marking system employed in most schools and colleges is statistically unreliable. Since that time scores of statistical studies have been made, all confirming this fact. Notwithstanding the accumulating evidence, colleges have

been slow to devise better methods and have for the most part declined to adopt the improved techniques recommended to them. As long as this situation prevails there can be no consciously directed improvement in college teaching, and we are practically estopped from evaluating the results of our work just because we cannot objectively differentiate good teaching from the inferior and the mediocre.

Investigation has not revealed any complete panacea for the defects of present marking systems, but two methods of improvement that promise usefulness may be commended. The first is the percentile technique of recording student standings in examinations and courses; the second is objective examinations.

### THE RANKING METHOD

The ranking method of reporting student achievement has long been discussed, and in one form or another has frequently been applied in practice. Spence's discussion<sup>1</sup> elaborates the principles underlying the relative marking procedure and suggests the basic techniques that would make it applicable to most situations. By it the instructor is set a much simpler task than he is now asked to perform in the assignment of letter or percentage grades. He is merely asked to rank his students in the order in which they have mastered the subject matter of his course, placing first that one whose achievement is greatest, and last the one whose achievement is least. The interpretation of such rank-order distributions is a matter of administrative policy to be carried out in a central office by means of statistical techniques and in accordance with an institution's administrative policy.

The advantages of the system are that, whereas the present system presents the instructor with the impossible task of assigning meaningful letter or percentage marks, the proposed method sets him a task that is within the compass of his ability to perform; and, secondly, that through the centralized interpretation of the record it becomes possible to equalize the marks from all instructors and departments and for all students.

### OBJECTIVE EXAMINATIONS

Coincident with the demonstration that present marking systems are undependable has come the revelation that the traditional college examinations are subject to an element of error that all too frequently

<sup>1</sup> Ralph B. Spence. *The Improvement of College Marking Systems*. Contributions to Education, No. 252. Teachers College, Columbia University, 1927.

renders them ridiculous as measures of student achievement. Customarily these examinations are "set" by college instructors with the intent that the student in his answers may "show forth" his "knowledge of the subject," his "command of the English language," and his "power to think." Whether the usual essay examination ever serves these praise-worthy objectives only divine omniscience would seem to know. What is apparent to finite minds is the inability of instructors to agree upon the quality of the students' efforts to perform satisfactorily. The oft-demonstrated tendency of a single student paper to yield instructor's marks ranging all the way from perfection to failure is a fact both ludicrous and tragic. The fact has been shown for a wide range of subjects, from mathematics and language to history and science, and indicates that teachers have in these examinations set themselves tasks too difficult for faculty intellect to compass.

So clearly and copiously has the ambiguity of the traditional type of examination been demonstrated that we may here forego the repetition of details. The implications of all investigations in the matter may be summarized in a quotation from Wiedeman and Wood in concluding their extensive analysis of examinations as now given in American colleges.

The fundamental purpose of examinations is to secure *accurate* and meaningful information about the achievements, capacities, and effective interests of individual students. Unless college grades afford *accurate* measurements of *defined* achievement expressed in terms of units which have *definite meaning* to all competent educators, they will not serve the constructive purposes which constitute the most legitimate excuse for having grades in our educational system at all.

It is hardly necessary to say that grades in American colleges do not at the present time afford such measurements. Indeed, our survey shows beyond a doubt that at least 95 per cent of the examinations cannot possibly yield such measurements; if the examinations in our sample are representative, it seems safe to say that college examinations do not conform to any of the recognized criteria of good examinations, — reliability, validity, comparability, etc. A large number of them are of doubtful pedagogical value, and a significant proportion of them are obviously pedagogically unsound.

The general indication of this survey is that college teachers and administrators have in their practice failed to appreciate both the importance and the difficulty of making good examinations and of assigning constructively useful college grades.<sup>2</sup>

Experiments in the field of psychological and educational measurement have not been merely negative. While they have demonstrated

<sup>2</sup> Charles C. Weidemann and Benjamin D. Wood. Survey of College Examinations. Teachers College, Columbia University, 1926.

the unsoundness of present methods of examinations, they have also provided the techniques of injecting intelligibility into the present chaos through the development and use of objective examinations. The variety of form possible in such examinations makes them usable in widely varying types of subject matter, and statistical techniques make it possible to describe them in terms of their reliabilities, validities, and other essential attributes. Many of these forms, such as the true-false, multiple-choice, completion, matching, recall, and analogy have had extended if not exhaustive analysis, so that we know their possibilities and can use them with some assurance as to their meaning. If college instruction is in need of improvement, here lies at hand an instrument of great possible usefulness in the proposed endeavor.

• The proposal to replace the present unreliable examinations by objective measures of student achievement is here made without any illusions as to their limitations. That they are not perfect measures we all recognize, but that they obviate many of the defects of the present system is capable of demonstration by the experimental and statistical techniques that have made the sciences of physics and biology grow from the older knowledges of natural philosophy and natural history. They can be scored with an exactness and clarity not possible in the usual examination. The resulting marks are independent of the personal judgment and prejudices of the examiner. They are intelligible to the student and instructor alike, and when consistently used they make possible comparative ratings in terms of large numbers of individuals pursuing the same courses in different years and even in distant institutions. By their use we can now give objective evaluation to the effectiveness of different curricula and varied techniques of instruction.

The advocacy of objective examinations is a plea that education shall make use of the newly developed techniques which, through wide use in related fields, are transforming the sciences of psychology, sociology, and biology. In all these fields statistical methods have enjoyed extensive and fruitful development in recent years. Education is privileged to share in this progress, and we should be as thoughtful and conscientious in the business of teaching as we are in that of biology and medicine.

#### LIMITATIONS OF OBJECTIVE EXAMINATIONS

It is easy to understand the hesitancy of college teachers to surrender the traditional methods of evaluating student achievement. While such academic caution may be oversaturated with unwarranted



conservatism, it is still true that college instructors cherish the hope of achieving educational results which it is not obvious that available test techniques measure adequately. The capacity of a student to integrate fragmentary information into a meaningful whole, the power to derive new and important generalization from an aggregation of isolated facts, the possession of insight or sagacity in James's meaning of the term, the balanced judgment, the power to defer and suspend decision, æsthetic as well as intellectual appreciation, — all these and other educational outcomes appear to many much more desirable objectives of college study than the acquisition of factual material easily measured by the simpler forms of tests now used. It is further feared that current emphasis upon the informational examination will lead students, as well as instructors, to overemphasize the importance of information to the subordination of more important values.

The reasonable basis of this view must be recognized, but in reply to it three things must be urged.

First, however valuable such objectives are in college education, the present methods of determining the degree to which students achieve them are so varied and unreliable as to make it practically impossible for an instructor to grant term marks to the members of a large class with any degree of fairness to his students. If we cannot derive a more just technique of discriminating between students than now prevails in reference to these matters, then we should abandon the giving of marks altogether. We should frankly say to students that these are the most desirable objectives of the college course, we should set our educational machinery to produce them, but we should deny ourselves the questionable luxury of pretending to mark students in such matters.

A second reply is more encouraging, namely, that to some degree these less definite and less tangible outcomes of education are measured by tests of the type now largely used. The student who achieves the outcomes indicated above also acquires a large fund of the more definitely informational type. His high score on an informational test is an indication of his ability in other matters. It is not claimed that this relationship is perfect, and we need extensive experimental work to demonstrate with exactness what it is. Enough has been done, however, to make clear that there is a definite and determinable element of indirect measurement in tests now available.

The third reply to the negativists is, "Let us get busy! Let us make the kind of tests that will measure what we wish to have measured!" Nor is this task so hopeless as it may seem. The possibility of making objective measures in any field seemed quite as chimerical a task

twenty years ago as the penetration of this unworked field seems to-day. The efforts to develop objective measures in the appreciation of music and art, in the nonintellectual phases of personality, and in the more complicated aspects of intelligence have achieved such success that hope accrues for effective work in the fields in question. Nor can the teachers of subject matter shunt these problems to the educational expert. Help may be gained from psychologists, statisticians, and others, but the academic teacher has a contribution which only he can make, and it is his obligation to make it.

In certain quarters there has already been a generous acceptance of the new measuring devices. Witness the work of the Bureau of Collegiate Educational Research at Columbia University and the development of so-called "placement tests" at Iowa. The history of the nation-wide efforts to study the teaching of certain academic subjects shows a gradually changing attitude in the matter.

### THE MATHEMATICS STUDY

The study of mathematics was organized in 1916 "for the purpose of giving national expression to the movement for reform in the teaching of mathematics."<sup>3</sup> The investigation was organized on the committee system. Distinguished mathematicians from colleges and secondary schools were assembled into a national committee. The field of mathematics teaching was analyzed into problems, investigations were set, and certain persons were charged with the responsibility of preparing reports. The general committee was composed of fifteen members, and with the agencies and individual teachers enlisted for coöperation the number ran into the hundreds.

The report was issued in several volumes and gives evidence of the great interest, industry, and ability involved in its preparation. The topics covered range widely from mathematical curricula in foreign countries to a discussion of standardized tests and the training of teachers. The report is a stimulating treatise, without doubt very helpful in its way, but one looks through it in vain for evidence of any well-organized experimental attack upon the vital problems in mathematics teaching. Questions are raised in large number and variety and are treated at length. The reader finds here clear statement of issues, brilliant analyses, critical opinion, pooled judgment of expert teachers, but little evidence of the sort commonly required in physics, biology, or scientific psychology as a basis of dependable conclusions.

<sup>3</sup> *National Committee on Mathematical Requirements. Report for 1922, p. 7.*

## CLASSICAL INVESTIGATION

The second of the national studies was the classical investigation, evidently conceived in a spirit similar to that of the mathematics study and headed by one of the most distinguished of American scholars. Its committee roll was resplendent with distinguished names. There were committee meetings, subdivision of the field for special work, statistical studies, tentative reports, discussions, collective judgments, and publication. An examination of the resulting volumes reveals the same type of acute analysis, high claims, and unanimity of attitude apparent in the mathematics report. The classical investigation, however, did not escape the contamination by experimental science quite so completely as did the mathematics study. Experimental education had made progress in five years; its methods had penetrated the minds of some teachers of the classics who were members of the committee, and, almost as an afterthought, it would seem, some experimental studies were undertaken. These studies still continue, and even the cherished theory of formal discipline through the study of Latin is being subjected to the laboratory method with a vigor hitherto unknown in the study of an instructional problem.<sup>4</sup>

## MODERN-LANGUAGE STUDY

While the classical investigation was thus caught from the rear, as it were, by the experimental method, the modern-language study made use of scientific methods from its early stages, and the final report<sup>5</sup> of the chairman of the Committee on Direction and Control is replete with the spirit of modern educational science. Excerpts from this report will point the moral better than a direct discussion.

Even at the Princeton meeting it became clear that we lacked one great tool for measuring them [the objectives], namely, standardized tests. As soon as we came under the influence of our adviser in Educational Psychology, Professor V. A. C. Henmon, we set about remedying this defect. With that move we had entered on a policy which was to absorb more and more the time of the committee through the balance of the first and the whole of the second year and a considerable part of the third year of our labors. . . .

By means of these tests, imperfect and incomplete as they admittedly are, the committee has been able for the first time in the case of any curriculum subject to measure and record, nationally and regionally, norms of achievement by

<sup>4</sup> E. L. Thorndike. *Mental Discipline in High School Studies*. *Journal of Educational Psychology*, 15: 1-22, 83-98, January, 1924.

<sup>5</sup> R. H. Fife. *The Modern Foreign Language Study in the United States*. Final Report of the chairman of the Committee on Direction and Control of the American Council on Education. *Educational Record*, 8: 252-261, October, 1927.

secondary-school pupils. The results of this for the clarification and solution of the problems of modern-language teaching will appear in detail in our published reports. This harvest is, however, insignificant in comparison with what may be done with the tests. Not the least important step during the life of the committee has been the growing recognition by progressive teachers that opinion subjectively formed is valueless unless supported by findings from tests. An active body of modern-language teachers can no longer listen with patience to a program which consists of the iteration of individual opinion regarding methods or organization or the setting forth of results unless success has been measured by reliable tools such as standardized tests. It is now recognized that the only way to break up the indescribably boring character of teachers' conferences on methods is to demand that every exponent allow his wares to be tested. . . .

The reader will find in these reports no supersyllabus of courses and texts, no oracular declarations as to method, no final decisions on many mooted points. What he will receive in the dozen volumes which we plan is a series of documents setting forth the present situation on the basis of as complete and scientific an investigation as we are able to make, and drawing from these only such deductions as seem to us inevitable. The satirical German proverb that to him to whom God gives an office, he also gives the understanding necessary to fill it, has been disproved in our case. We have received no wisdom for the solution of the age-old problems of modern-language instruction, and the brevity of the time allowed to us has given no time for the carrying out of the fundamental experiments which might open the way to the solution of some of them. Throughout the reports the authors have sought to cultivate the spirit of tolerance and to avoid finality of judgment. We have husbanded our resources in order that we may publish in full the evidence on which the findings are based.

We know that a perusal and full evaluation of studies involving tests and measurements and the other phases of mass experiments is hard work which most critics will not undertake, but we believe that it is only by way of these procedures that real progress in language teaching can be made. Fine words and oracular declarations are easier reading for teacher and school director, but they lead to no useful end. For the teacher and curriculum-maker no more than for the pupil is there a royal road to the worth-while.

It is difficult to believe that these words have been written by a teacher of the modern languages, and he one of the most distinguished, so accustomed are we to *ex cathedra* pronouncements of our academic colleagues on educational matters. The quotations seem more akin to the apostolic utterances of the modern crusader for educational research. May we hope, however, that they are symptomatic of a changing academic attitude away from a complacent acceptance of traditional college practices, however brilliantly interpreted by individual experience, to an insistent desire to know the truth about educational matters in the objective and impersonal manner acceptable in other fields of science.

## EDUCATIONAL DISCUSSION THROUGH EXPERIMENT

The most promising sign in the study of college instruction is the growing tendency so illuminatingly stated by Professor Fife in the passages quoted. Effective illustration of this could be drawn from several quarters, but further discussion is based upon certain efforts at the University of Minnesota the account of experimental work being prefaced with a brief statement of the organization of the Committee on Educational Research, since the experiments to be described have been projects of this committee.

The University of Minnesota Committee on Educational Research is a nonadministrative body appointed by the president of the university for the purpose of studying the problems of college education in this university. Its formal reports are made directly to him. The committee is composed of fourteen members of the university faculty, eleven of whom are administrative officers.

The committee has operated much like any other university committee,—through meetings, discussions, and memoranda circulated among its members. From time to time it has worked through subcommittees especially interested in particular research projects. For the personnel of the subcommittees it has been found desirable to go outside the membership of the general committee, with the aim of enlisting the aid of specially interested and expertly qualified faculty members, and in some cases of graduate students. Through this extension the committee has grown until it now embraces approximately forty members.

During the several years of its work the committee has inaugurated fourteen projects. Five of these have been carried through to completion; upon six others we have had reports of progress; and three have been merely authorized. The present discussion will deal first with a study under Project III entitled "Relationship of Class Size to the Efficiency of Instruction."

*Class-size project.* The basic virtue of this project, which has been directed by a subcommittee headed by Professor E. H. Hudelson, is that it has substituted experimental investigation for the usual method of unhampered discussion of an educational problem. In the three years during which they have studied the problem Professor Hudelson and his co-workers have pursued a program which has involved fifty-nine fully controlled or semicontrolled experiments involving 108 classes under twenty-one instructors in eleven departments in four colleges of the University of Minnesota. The experiments involved 6059 students,—4025 in large classes and 1854 in small classes.

Direct man-to-man comparisons were made upon 1288 pairs of students, carefully matched as to intelligence and scholarship. The final criterion of efficiency was student achievement as measured by tests and examinations, most of which were objective.<sup>6</sup>

*Class size and student achievement.* The special experiment to be detailed here, which is illustrative of the entire investigation, was carried through in the beginning courses in physics by Professor Henry Erikson, head of that department.

This particular experiment was in part stimulated by the general university investigation of class size; it is probably more correct to say that this was the occasion of the physics study. The cause lies deep in the prevailing condition of all our colleges and of most departments therein, as a result of which the size of classes has been gradually but irresistibly increased. Year by year the number of students in physics classes had been pushed up from 20 to 30, to 40, to 50, to 75, to 150. Such a radical shift in teaching conditions is a genuine basis for alarm to those whose educational belief and methods have committed them to the small-class idea, as has been true of most of us. To test in objective fashion a teaching condition that had been forced upon them, therefore, was the real motive of the class-size experiment in physics.

The method of the experiment was the familiar one of parallel sections and paired groups. There was one section of twelve students and another section of one hundred and fifty students, including twelve that in certain objective measures were the equal of the twelve in the small group. The same instructor taught both groups by the same method. The achievement of all was checked by the same measures and independently of the instructor. The results failed to reveal any advantage to the small group.

The experiment was repeated in succeeding quarters in different units of subject matters and by different instructors and is now well on in the second year of investigation. The burden of proof is still on the small-class idea.

The primary interest in this experiment is the educational matter. A second concern is the financial one, and the study reveals that it costs 7.6 times as much to teach a student in the small class as it does his equal in the large class. Less interest attaches, however, to any detailed result forthcoming from the experiment than to the fact that this particular department is applying to its teaching problems the same scientific methods that it applies to its study of problems in physics.

<sup>6</sup> E. H. Hudelson. *Relationship of Class Size to the Efficiency of Instruction in the University of Minnesota*. University of Minnesota Press.

*The teaching of science.* The second illustration offered is chosen from the work of our subcommittee on the teaching of science. This subcommittee is headed by Dean E. M. Freeman, professor of plant pathology, and associated with him directly and indirectly are some sixty other teachers of science in the university. The program of investigation envisaged by this subcommittee is indeed a comprehensive one, and its realization will stretch into the years, but enough has already been done to justify large expectations from this concerted attack upon the problems of college science teaching. Seven experimental projects are already completed or are under way, and others are imminent. The subcommittee proposes nothing less than a thorough-going experimental attack upon the whole curricular and teaching problem of college science by the most effective techniques which educational science can provide.

In feeling its way toward an experimental program the committee has accepted simple problems which promised usefulness in the development of method, and at the same time promised immediately helpful results in teaching. Two such problems arose in the medical school, one of which may be briefly described. The experimental study is the joint work of Professor C. M. Jackson, head of the anatomy department, and Mr. A. W. Hurd, secretary of the science committee.

*Anatomy.* The problem arises in the first course in anatomy in the medical school. Medical instruction has long proceeded upon the belief that every student must dissect the human body independently. The Association of American Medical College requires that each student shall dissect one lateral half of the body. In some states this is even a legal requirement, prerequisite for license to practice medicine. This means that there must be a cadaver for each two students.

It is an open question whether this amount of dissection adds to a student's knowledge in proportion to its amount. Would not one half the dissection be equally effective? Apparently nobody knows, even though the requirements have been legalized. This is the question which the anatomy department has submitted to experimental study. Will students working four on a body learn as much as when working two on a body? Great care has been exercised in setting up the experiment in order to secure adequate control of all factors. There was an elaborate technique in pairing students, and definite control of instructional techniques. The results were extensively checked with objective examinations during and at the end of the course. These tests were "practical" as well as verbal. The experiment was repeated in a second quarter. No advantage in student achievement was shown to result from the more expensive method.

Again we are not here concerned with detailed findings which may or may not be confirmed by further investigation. The significant thing is the demonstrated possibility of submitting our educational problems to the techniques of experimental science. To some minds it will have the disadvantage of inhibiting discussions and dogmatism in educational matters.

In the two Minnesota experiments here reported the results have challenged with objective facts certain cherished beliefs, and in one case they call in question not merely college practices but legal requirements in education. A similar fate almost certainly awaits many of our most respectable traditions in college education as experimental evidence becomes available. Clearly the adventure is not for timid souls.

#### IMPROVEMENT THROUGH CURRICULAR CHANGES

The character of instruction in college, as elsewhere, is, of course, relative to the nature of the curricula offered. There is much evidence that these are now felt to be out of joint with the needs of students and the nature of modern life. The favorite indoor sport of college faculties, that of revising the curriculum, has been greatly accelerated since the war, and everywhere there are appearing changes and adaptations. In a recent survey 161, or 36 per cent, of 452 colleges responding to an inquiry make the assertion that they are changing and presumably improving the curriculum. These changes range from such simple matters as the addition of new courses or the discontinuance of old ones to a complete analysis and revamping of the entire curriculum. Orientation courses, honors courses, differential curricula for students of different abilities, semiprofessional courses of less than four years in length, changes in prerequisites for professional work, the progressive reduction of college courses to the earlier school years, the consolidation of high-school with junior-college offerings, — these and similar modifications have become so common that they hardly excite curiosity any longer. In cases like those at Antioch, Stephens, and Wisconsin we observe an attempt to change the entire curricular set-up of the college.

Despite the obvious activity in the matter of the curriculum it must be admitted that we are still in the throes of the trial-and-error stage of curriculum-making. We generally proceed from the criterion of "best practice" as determined by a survey of offerings in reputable institutions, or from the vantage of a particular philosophy of education that implies the necessity for certain curricular offerings for all or certain students.

But does anyone know that a year of freshman English really changes



a student's capacities sufficiently to justify the time it requires? In what way and to what degree, if at all, is an introductory orientation course for college freshmen superior to some other curricular offering? What changes are wrought in a student through a four-year, five-year, or six-year requirement in English that may not be achieved through some simpler and less coercive program? What does a two-hour, four-hour, six-hour, or eight-hour per week requirement in laboratory practice add to the simpler lecture or demonstration program in introductory chemistry or zoölogy? To what degree does the recently extended program and highly lauded curriculum in history and the social sciences actually accomplish the results its champions so vigorously claim for it? Is an introductory course in science for college students defensible in terms of the changes it works in student intellect and attitudes? Is anyone prepared to defend with objective data the wilderness of prerequisite courses into which the young student plunges upon college entrance? Certainly no one is, and before these and scores of similar questions we shall stand helpless until, through long-extended investigation, the processes of scientific study shall have created for us a body of educational knowledge as yet nonexistent.

We cannot, of course, delay our practical efforts at education until we determine the answer to our troublesome questions through experimentation; the immediate needs of the present generation of young people require that we offer the curricula that our best judgment can devise; but the science of education requires that we clarify these problems through experimental studies in behalf of student generations yet to come. Somehow or other we must find the means by which we can substitute verified knowledge for personal and common judgment or the deductions from *a priori* hypotheses about what a curriculum ought to do to students.

Neither time nor knowledge make possible here the detailed description of curricular research. In passing, however, two lines of progress may be indicated. The first is the finer analysis, and, as situations make possible, the experimental analysis of course content. Botany, or even Botany 1, is not something definite and equally understood by all who use the term in educational discussion. It is a convenient trade name for a composite of materials and methods, and it varies from instructor to instructor, and from institution to institution, in almost unbelievable fashion, changing in content and emphasis with each student generation.

Is introductory botany a useful prerequisite for the agricultural sciences? That all depends upon the details which the term "botany" implies. It may be; there is a belief that it often is not. The question

as stated is probably unanswerable, because it is stated in terms that are too gross for definite reply.

Similar conditions prevail in all courses growing out of a rich and varied body of knowledge, or that are in any way affected by the growth of academic research. Analysis and definition into much finer units than are implied in the trade names bandied about in curricular discussion is essential if intelligible evaluation of curricular content is to be attained.

As an illustration of what is implied in this argument it will be useful to sketch briefly a study now nearing completion at the University of Minnesota. Four years ago Professor W. E. Peik undertook to analyze and evaluate the professional courses required in the training of academic-high-school teachers. These courses, seven in number, total twenty-six quarter credits and have been a constant requirement for a number of years. Mr. Peik set his investigation to answer a number of questions, some of which may be indicated as follows: What is the subject matter of this entire curricular offering? How is it organized in the several required courses? To what degree is there duplication of content? What is the time distribution to the several topics of the requirement? How well do students master this content? How well do they retain it after graduation? What parts of this do young teachers find of practical value in their work? What parts of it are an aid in educational thinking? These and similar questions are simply unanswerable so long as we deal with courses in the gross units indicated in catalogue announcements. Diverse answers can be given to crucial questions about "educational psychology" or the "history of education," and absolutely contradictory replies may both be true or both false, according to the part or aspect of the total content envisaged in the response. To avoid the implicit equivocation in the usual type of curricular study, Mr. Peik analyzed his seven courses into 816 separate and distinct items and applied his techniques to each item separately. Laborious and expensive work! Yes, thousands of hours involving the coöperation of more than a hundred college instructors and young teachers. Out of it all is coming a body of knowledge that could not have been obtained in any other way, and which will be the basis for a differential readjustment of curricular requirements that has been hitherto impossible.

The second line of progress to be suggested has already received emphasis in this discussion. It is the objective measurement and evaluation of the changes wrought in a college student when he "takes," as we say, a certain curricular dosage. The naïve assumption underlying college work, that every unit of the curriculum will produce some desirable or useful alteration in character or intellect if the student will

only master the course, is certainly to be called in question. Widespread among students is the contrary view, and alumni generally discredit the usefulness of portions of their college work. It is the business of the faculty, through research and objective evidence, to determine the degree of validity in their own assumptions and the measure in which student and alumni criticism is justified.

### IMPROVEMENT THROUGH PERSONNEL MANAGEMENT

The improvement of college instruction is further dependent upon an improved method of dealing with the intellectual, emotional, social, and vocational interests of students. It would not be true to say that personnel service is a new element in college education, because the very essence of the matter has always been the adjustment of educational machinery to the intellectual and personal needs of students. What can be said, however, is that the possibilities of such educational adjustment have been enormously improved through recently developed techniques of personnel management. The invention of intelligence examinations, tests and rating scales for nonintellectual traits, techniques for the analysis of personal and vocational interests, the case method of social study, the techniques of mental hygiene as applied to the college problem, and the cumulative record which facilitates the aggregation of an individual's entire personal history into a single unit, — all these have made possible an understanding of the college student in a discriminating fashion unthought of a decade ago. By means of these devices we can go about the diagnosis of student needs in a manner that emulates the long-developed techniques of modern medicine. As a matter of fact, educational diagnosis can now be, as it should be, more comprehensive than in medicine, for through the recently developed student-health service, the resources of modern medicine are available to the college faculty and administration as an item in its program.

Space does not here permit a detailed survey of the methods of student personnel management,<sup>7</sup> nor is it now possible to describe the administrative set-up by which a college may take advantage of all the new devices. Through them it is now possible to provide the following useful services :

1. An objective and increasingly accurate determination of the intellectual capacity of college students.

2. The scholastic interests and achievements from all previous school experiences.

<sup>7</sup> See chapter xvi, The Personnel Department.

3. An analysis and evaluation of nonintellectual traits of a student, his personal and vocational interests, and the picture of his healthy and pathological emotional life.

4. The description of the family, social, and economic supports and deterrents operative in his further education.

5. The physical and disease record, with indications of possibilities of efficient physical life.

6. The unification of all these data through the cumulative record system into a single picture of student possibilities, with indications for general and remedial educational treatment.

If colleges are serious about the business of improving instruction, then the techniques of personnel service thus indicated it must somehow use. Even with the best of methods we understand all too little of human possibilities to render us wholly sanguine about the effectiveness of our educational program.

#### THE PROFESSIONAL TRAINING OF COLLEGE TEACHERS

In concluding this discussion a word may be said about the professional training of college teachers. The main thesis for which we have here contended,—that the improvement of college instruction must be founded upon a program of research,—implies that those who would be party to such improvement must have some training in the methods of collegiate educational research and in the sciences basic thereto. It was admitted early in this paper that we cannot be cavalier in our criticism of college teaching. By the same token we cannot claim the right to critical judgment of the methods and outcomes of educational science, nor can we profit by it in guiding our own teaching efforts, until we have at least mastered its elementary techniques and principles. Such mastery will not come of itself as an incident of graduate training or of teaching experience. It must be sought directly, with due effort and with the expenditure of time, quite as one seeks a mastery of mathematics or of physics. This means that some kind of definite professional training must be provided.

This matter of the training of college teachers as yet lags behind the best that is to be found in the elementary and secondary fields, where it is no longer assumed that the mastery of subject matter is a sufficient preparation for the difficult task of instructing students. Both the colleges where the teachers work and the graduate schools where college teachers receive their training have been singularly slow to include in the graduate training program any instruction in professional subjects. Yet a recent study reveals that the occupational destiny of from 60 to 80 per cent of all the holders of Ph. D. degrees

from American graduate schools is teaching. It is 78 per cent for Harvard, 70 per cent for Princeton, 60 per cent for Wisconsin, and 71 per cent for California. It is doubtful if in any of these schools the recipient of this degree is regarded any less highly because of this lack of professional training for his future task. Nor is the lack of such training any barrier to appointment to college teaching. All studies on the question indicate an almost total indifference to this matter on the part of college administrators.

The writer recently conducted an investigation for a Committee of the North Central Association of Colleges and Secondary Schools relative to the professional training of college teachers. Information was secured from three sources: college instructors, college administrators responsible for selection and guidance of college teachers, and deans of graduate schools responsible for their training. In summarizing the results of the three inquiries the committee reported as follows:<sup>8</sup>

1. College administrators at the present time do not recognize professional training in education as a determining qualification for eligibility to appointment as an instructor in a college. There is some recognition of such training as a desirable supplementation to an otherwise qualified candidate.

2. Graduate schools in the Association of American Universities do not, in general, make provision for professional training in the curricula leading to graduate degrees. Indifference to the need for such training is all but universal in these schools, which aim to train their students for academic scholarship and productive research, even though the records show that such students are headed toward college teaching as a career. However much they may decry the obvious implication of available facts, graduate schools are clearly teachers colleges; but as such they appear indifferent, if not hostile, to one element of a teacher's preparation which is now universally accepted as a requisite for a teacher's certification at every educational level below the college.

3. Despite the indifference of college administrators and graduate schools to the claims of professional training, there is a clear recognition on the part of college instructors that such training in formal courses would be useful. These instructors find themselves confronted with difficult problems which academic training, intellectual ability, and experience do not enable them to solve. They therefore feel the need for the formal consideration of these problems in courses prior to the time of appointment as college instructors, and would recommend the offering of such courses to graduate students.

This apathy toward the adequate training of college teachers is certainly a temporary condition. As already noted, there is a tendency to require of instructors in public junior colleges the same degree of professional training as is required of high-school teachers. It is not difficult to foresee the influence of this tendency upon the nonpublic

<sup>8</sup>M. E. Haggerty. *The Professional Training of College Teachers*. *North Central Association Quarterly*, 2: 113, June, 1927.

institutions. If those who direct the destinies of colleges and graduate schools are not moved to avail themselves of the growing educational sciences, they will most certainly be forced to do so by the increasing social pressures upon the college. Knowledge and research in this field on the part of the faculty are not merely a means to the more effective college; they are the inescapable conditions of survival.

There is, to be sure, the danger that legal and institutional requirements in this field may outrun the available instructional material useful for the professional training of college teachers. The graduate school should recognize at once the value of what is available in the field of student personnel and guidance, in the matter of improving instruction, in curricular reorganization, and in college organization and administration, and it should encourage students to pursue graduate courses in these matters. Out of simple course offerings in these fields will come the urge to young college instructors to investigate teaching problems in the college field. Such investigation the university should encourage as a means to its own enlightenment and efficiency.

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## CHAPTER XVIII

### STUDENT HEALTH<sup>1</sup>

By JOHN SUNDWALL, Professor of Hygiene and Public Health  
and Director of the Division of Hygiene and Public Health,  
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#### EDUCATION AND HEALTH

When a college or university confers a degree, it underwrites, in a sense, the young man or the young woman on whom the degree is conferred. Its diploma is accepted as a recommendation of the graduate, as testimony that the graduate is prepared to serve or lead society intelligently and effectively. Service and leadership on anyone's part depend, however, not only on mental attainments but also, among other things, on health and the length of time health and physical efficiency are maintained. If, owing to ignorance and neglect of the fundamentals of healthful living either during college days or after graduation, the energy essential for effective service is lacking or cannot be maintained, or if health is greatly impaired, the graduate loses much. Society, in turn, which gives large sums for the education of youth, fails to receive part of its just and greatly needed returns from its investment in education. A supposed asset becomes a liability.

Because the health of students is a factor not only in academic efficiency, then, but also in the possible service to society on the part of the student after graduation, colleges and universities are concerning themselves and should concern themselves with student health. They are fostering the health of immature citizens. They are helping young men and young women, who should be future leaders, to a better understanding of the structure, functions, and needs of the human machine and of the importance of intelligent attention to these needs to safeguard and promote health and physical efficiency both during college days and in later years as well.

It is a lamentable but well-known fact that most people begin to break down physically at an age in life when they should be of greatest

<sup>1</sup> THE EDITOR'S NOTE. This chapter should be read in conjunction with the chapter entitled "Physical Education and Athletics," p. 562.



economic and social value. There is much that is not yet known regarding health promotion and disease prevention; but if the youth of today can be interested, or, if necessary, constrained to give, intelligent attention to the needs of the human machine as far as we yet understand these needs, and to community health as well, gratifying and far-reaching results should follow.

Education for citizenship is incomplete without adequate emphasis on both individual and public health. This need becomes more important as life becomes increasingly complex and as living and working conditions become more congested. A child once defined salt as "Something which spoils everything you don't put it in." Health might be said to be something that spoils everything for everybody who hasn't it — and often for others concerned. Health should mean not only the absence of disease but also wholesome vigor and energy in keeping with the period of life.

Samuel Butler's *Erewhonians* considered disease a crime. We are not so harsh in our judgment of it or in our measures against it as were these imaginary people of *Erewhon*. The time may come, however, when colleges and universities will question the advisability of granting degrees to students who have neglected to correct correctible physical defects if these are potential handicaps to health and physical efficiency, — who have failed to give intelligent attention to a matter so important as health.

An educational institution which does not make adequate provision for effective instruction in the fundamentals of health promotion and disease prevention, and does not try to impress students with the importance of intelligent attention to health not only during college but in later years as well, fails to provide instruction and training which is of importance to every one of its students and to society as well. Health is in many respects a problem of education.

College students are, as a rule, healthy. They are at a period of unusual vigor. Moreover, as scientific attention to the health of the pre-school and school child reaches more children and increases in effectiveness, students should be increasingly free from correctible physical defects when they enter college. Health examinations of large groups of students, however, still reveal many physical defects and potential physical handicaps.<sup>2</sup> They reveal also, on the part of a very large majority, an appalling lack of information regarding the functions and needs of the body, as well as careless attitudes toward these needs and lack of attention to them.

Not infrequently, however, there is overconcern or hitherto uncon-

<sup>2</sup> Statistics are given under "Reconstruction and Rehabilitation."

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University of Michigan

#### EDUCATION AND HEALTH

When a college or university confers a degree, it underwrites, in a sense, the young man or the young woman on whom the degree is conferred. Its diploma is accepted as a recommendation of the graduate, as testimony that the graduate is prepared to serve or lead society intelligently and effectively. Service and leadership on anyone's part depend, however, not only on mental attainments but also, among other things, on health and the length of time health and physical efficiency are maintained. If, owing to ignorance and neglect of the fundamentals of healthful living either during college days or after graduation, the energy essential for effective service is lacking or cannot be maintained, or if health is greatly impaired, the graduate loses much. Society, in turn, which gives large sums for the education of youth, fails to receive part of its just and greatly needed returns from its investment in education. A supposed asset becomes a liability.

Because the health of students is a factor not only in academic efficiency, then, but also in the possible service to society on the part of the student after graduation, colleges and universities are concerning themselves and should concern themselves with student health. They are fostering the health of immature citizens. They are helping young men and young women, who should be future leaders, to a better understanding of the structure, functions, and needs of the human machine and of the importance of intelligent attention to these needs to safeguard and promote health and physical efficiency both during college days and in later years as well.

It is a lamentable but well-known fact that most people begin to break down physically at an age in life when they should be of greatest

<sup>1</sup> THE EDITOR'S NOTE. This chapter should be read in conjunction with the chapter entitled "Physical Education and Athletics," p. 562.

economic and social value. There is much that is not yet known regarding health promotion and disease prevention; but if the youth of today can be interested, or, if necessary, constrained to give, intelligent attention to the needs of the human machine as far as we yet understand these needs, and to community health as well, gratifying and far-reaching results should follow.

Education for citizenship is incomplete without adequate emphasis on both individual and public health. This need becomes more important as life becomes increasingly complex and as living and working conditions become more congested. A child once defined salt as "Something which spoils everything you don't put it in." Health might be said to be something that spoils everything for everybody who hasn't it — and often for others concerned. Health should mean not only the absence of disease but also wholesome vigor and energy in keeping with the period of life.

Samuel Butler's *Erewhonians* considered disease a crime. We are not so harsh in our judgment of it or in our measures against it as were these imaginary people of *Erewhon*. The time may come, however, when colleges and universities will question the advisability of granting degrees to students who have neglected to correct correctible physical defects if these are potential handicaps to health and physical efficiency, — who have failed to give intelligent attention to a matter so important as health.

An educational institution which does not make adequate provision for effective instruction in the fundamentals of health promotion and disease prevention, and does not try to impress students with the importance of intelligent attention to health not only during college but in later years as well, fails to provide instruction and training which is of importance to every one of its students and to society as well. Health is in many respects a problem of education.

College students are, as a rule, healthy. They are at a period of unusual vigor. Moreover, as scientific attention to the health of the pre-school and school child reaches more children and increases in effectiveness, students should be increasingly free from correctible physical defects when they enter college. Health examinations of large groups of students, however, still reveal many physical defects and potential physical handicaps.<sup>2</sup> They reveal also, on the part of a very large majority, an appalling lack of information regarding the functions and needs of the body, as well as careless attitudes toward these needs and lack of attention to them.

Not infrequently, however, there is overconcern or hitherto uncon-

<sup>2</sup>Statistics are given under "Reconstruction and Rehabilitation."

fessed fear on the part of a student who, though organically sound, thinks he has some physical defect or abnormality, or is not strong enough to live normally. Sometimes this has been brought about by overemotional, oversolicitous, and overindulgent parents. Sometimes students have been misled by quacks or have been morbidly influenced by the sensational advertising of charlatans describing certain normal physiological processes as abnormal. An amazingly large number of people, men and women, who are organically sound live long lives of limited usefulness or of dependence on family or society because of a mistaken idea of ill health or physical subnormalcy. There is a very real satisfaction in being able at times to assure a student that certain fears or ideas are groundless and that he or she is physically sound. Often this assurance must be followed for a time by more or less frequent periods of advice and mental therapeutics.

There is need of attention to students' health not only along the lines of the prevention and correction of physical subnormalities and defects but in the matter of controlling various communicable diseases which appear from time to time within the college or in the community and of arranging for preventive measures. Furthermore, provision must be made for the scientific treatment and care of students in case of illness. In addition a constructive program of health conservation and promotion and health education should be carried on.

The need of attention to students' health was recognized before much was known regarding health needs or methods of dealing with these needs. Amherst, Harvard, and Yale, in 1860, erected gymnasiums and introduced physical training as a health measure. Since that time most colleges have made provisions for what is now called physical education, in which physical exercise, dexterity, and skill are emphasized. With the great advancement in the sciences that bear on health and disease, however, came an appreciation of the fact that, while physical exercise adapted to the needs of the individual makes its contribution in the maintenance of health, there is no single approach to health. We now know that many health factors should be given intelligent attention, — that health is more dependent on a balanced diet, freedom from focal infections, and protection from communicable diseases, among other things, than it is on special periods of physical exercise.<sup>3</sup>

From time to time, with the gradual recognition of different health factors, various agencies or departments in colleges and universities began to interest themselves in certain aspects of student-health work.

<sup>3</sup> The relation of physical education to student health is considered under "Relation of Physical Education to Student-Health Service" (p. 552).

For example, the departments of biology in many institutions began to give general courses in physiology and personal hygiene; the departments of bacteriology in many schools interested themselves in sanitation and communicable diseases; where a department of household economics was maintained, the instructors concerned themselves with the improvement of the students' nutrition; activities pertaining to good housing were carried on by bureaus or in connection with the office of the dean of students. In the last fifteen or twenty years student-health services have been established in most if not all of our leading institutions to provide scientific attention to various health factors. In general, interest in and activities for students' health had a gradual evolution, and several more or less independent agencies have contributed to the development of the student-health program.

With a better-balanced and more comprehensive student-health program as the goal there has been a growing tendency to correlate or combine various student-health activities through or in one agency, and to enlarge its interests and activities to include all constructive student-health work in line with our present knowledge of health conservation.

Student-health services have undergone and are undergoing changes with regard to emphasis in their interests and activities. For a time they were interested for the most part with environment, — sanitation. They concerned themselves largely or wholly with the water and the milk supply, with the condition of swimming pools, rooming houses, etc. When contagious diseases appeared among students, the isolation of those afflicted as a means of controlling the spread of disease was their chief concern. Today the center of interest is the student himself or herself and his or her health needs, so far as we yet understand these needs through various sciences that bear on health and disease. This chapter is largely a consideration of the aims, activities, organization and problems of a student-health service and its relation to other agencies concerned with student health and physical welfare.

### A CONSTRUCTIVE STUDENT-HEALTH PROGRAM

The extent to which a college or university should concern itself with the health of its students depends in a large measure on the type, size, and location of the institution. In all cases, however, the one in charge of students' health should realize that the objectives of his work are not limited to keeping students well enough to carry on their academic work efficiently but include helping them to build up and maintain sound, vigorous, and harmoniously developed bodies (energy genera-

tors of the first magnitude) and helping them to a better understanding of the structure, functions, and needs of the human machine in general and of their own in particular, and to an appreciation of the importance of intelligent attention to these needs not only while in college but in later years as well.

Two major groups of interests and activities make up constructive and comprehensive student-health work. The emphasis of the one is on more or less negative aspects of health, — the treatment and care of those who are ill and the control and prevention of communicable diseases. The emphasis of the other is on the conservation and promotion of positive health and physical efficiency. Individual and group instruction in the fundamentals of health should be given, and adequate provision for attention to health needs should be made. This calls not only for sanitary environment, appropriate housing, wholesome food, physical education, and recreational facilities, but for adequate student-health service.

It must be borne in mind that the prevention and control of communicable diseases and the treatment and care of ill students, on the one hand, and what is termed the health-promotion program, on the other, while interrelated, call for different lines of thought and action at various points. Building up a strong body does not assure escape from disease, especially communicable disease if one is exposed; and freedom from actual disease does not necessarily mean that one has positive health, physical efficiency, and proper endurance. Both groups of interests and activities should be included in a student-health program and should be correlated in such a way as to make the whole program as balanced, constructive, comprehensive, and effective as possible.

*The prevention and control of communicable diseases and provision for the treatment and care of ill students.* Owing to the close social contact and long indoor seasons of college life, students are the victims of many of the milder forms of general infections or communicable diseases.

By far the greatest number of illnesses among students belong to the respiratory group. The infection may be called a plain cold or recorded as acute rhinitis, acute coryza, acute catarrh, acute nasopharyngitis, pharyngitis, laryngitis, tonsillitis, trachitis, bronchitis, la grippe, or influenza. At any rate, approximately one half of our students are the victims of respiratory disorders at some time or several times during the year. There is much academic loss each year as a result of acute respiratory disturbances among both students and faculty.

In general three distinct epidemics of respiratory disorders occur during the school year. The first comes shortly after school begins. It usually affects many students and reaches its peak, as a rule, in the course of a month. A second and usually more serious epidemic comes on with the return of students after the Christmas holidays. The third but much less serious epidemic occurs after the Easter vacation. Those concerned with students' health, therefore, look askance at vacations. In addition to these three epidemic types, colds frequently occur which are doubtless due to exposure at dances, football games, on automobile rides, etc. during inclement weather.

The average number of the specific infectious diseases per 1000 students enrolled for 14 of our leading colleges and universities for several years is given by Forsythe as follows: chicken pox, 1.3; diphtheria, 0.6; measles, 1.8; mumps, 4.0; scarlet fever, 1.8; smallpox, 0.3; tuberculosis, 1.4. Thus it is seen that the specific infectious diseases spread by discharges from the mouth and nose are relatively unimportant in the student-age group. If present they can usually be confined to a few students, although they may appear from time to time in rather severe epidemics. Foci of diphtheria occur frequently during the winter months but are readily controlled. Venereal diseases among college students are becoming relatively rare. At the University of Michigan two cases were found in 3078 entrance physical examinations. Forsythe gives the average per 1000 enrolled in the 14 institutions as 1.2. This is significant in view of its prevalence even in our institutions of higher learning twenty-five years ago. Skin infections — impetigo contagiosa, scabies, tinea cruris — are not uncommon, running as high as 25 per 1000.

As a rule, when colleges and universities are located in cities where efficient municipal health agencies are functioning, there is relatively little need for concern regarding such routes of disease transmission as water, milk, food, and insects; yet, epidemics of typhoid fever, paratyphoid fever, septic sore throat, and diphtheria, from milk infection are not infrequently reported by students' health services. Food infections due to "carrier" servers or preparers of food are not infrequent. One "carrier" employed as a server of milk at a cafeteria was responsible for more than 100 cases of paratyphoid fever at one of our large universities. Recently, at one university, four students contracted trichinosis from eating pork sandwiches while in a neighboring state attending a football game.

A student-health service should not only be adequately prepared to handle communicable diseases, but it should make provision for scientific treatment and care in all cases of illness among students. In this

respect it differs from the usual public-health agency. A college or a university is made up of many students who are not yet mature and who are away from home, preparing for future work at some expense not only to their parents but, in most schools, to society as well. In general, these students are not familiar with the machineries of modern medicine. It is of importance from several angles that ill students be made well and ready to go on with their academic work as soon as possible. In one respect a student-health service is comparable to the health machineries maintained by many industries.<sup>4</sup>

An efficient health service can do much to minimize the danger of communicable diseases both in regard to the numbers involved and in regard to the seriousness of the illness for those afflicted. It encourages early attention to physical disturbances and illnesses and makes a real contribution to student health and academic efficiency. The low student-mortality rate is due in part to efficient health services. In one of the larger universities, with an enrollment of approximately 10,000 students, the mortality rate in recent years has been less than one for each 1000 students enrolled, and accidents, chiefly automobile accidents, were responsible for more than half these deaths. For our country as a whole the mortality rate for this age group is between four and five per thousand. Thus it is seen that being a student is the least hazardous of occupations.

*Health promotion.* Health-promotion interests and activities include intelligent attention to a number of health factors, among which may be mentioned periodic health examinations and overhauls; freedom from bodily poisons, with particular reference to focal infections; prevention and correction of physical defects and potential physical handicaps; prevention, in so far as we understand this, of degenerative diseases which are likely to come on insiduously in early adult life; balanced diet; exercise suited to individual needs, especially outdoor exercise; sunshine; rest, sleep, and the avoidance of excesses and overfatigue; emotional stability (mental hygiene); clothing and shelter; air conditioning with relation to temperature, humidity, motility, and air pollution. These factors and their relative values must be taken into consideration in a comprehensive health program.

The student, as a rule, is not keenly interested in health promotion. He usually feels abundantly supplied with health, and therefore feels no need of paying any attention to it. But it is while he has health that he should learn to appreciate its value, — the value not only of the absence of disease but of dynamic health and physical efficiency during

<sup>4</sup> The treatment and care of ill students is considered more in detail under that heading.



the years to come as well as for immediate use. A health program should try to interest the student in health not only for the present but in a projective sense, — in his or her future health needs and health status.

Unfortunately we have been unable to discover any fundamental interests or instincts, with the possible exception of the play factor, which impel students to build up and maintain sound, active bodies; and in games and sports health aspects are usually overshadowed or lost sight of in enthusiasm for performance, skill, and competition. The desire for positive health and physical efficiency, and the practices for maintaining it, are the products of intelligence and determination, and are often opposed to inclination and habit. A positive health and physical-efficiency program must be conducted somewhat as is the program of any department of instruction. It can be effective only through a persistent and rigid process of education whereby students are led to appreciate the need for and the value of a long lasting, perfectly running, powerful body machine, and are trained in the fundamentals of healthful living.

In its program of disease prevention and control and of health promotion the interests and activities of a student-health service can be grouped into three general divisions: personal attention, sanitation, and health education.

### PERSONAL ATTENTION

Personal attention includes the interests and activities in disease prevention and control and health promotion which deal directly with individual students: physical examinations; follow-up work; reconstruction and rehabilitation; bureau of records; care and treatment of ill students and isolation for communicable diseases; vaccination and inoculations.

*Physical examinations.* All students entering for the first time should be required to take a complete physical examination. The value of these examinations may be stated as follows:

1. It introduces the student to a most valuable health procedure. The periodic health examination, accompanied as it should be with advice and instruction as to individual health needs, will prove a most effective health measure. These examinations, followed by corrective measures when needed, bear the same relation to the positive health and longevity of the human machine as do periodic inspection and overhauling to the efficiency and lasting qualities of the automobile.

2. It determines the physical condition of each student, so that proper advice regarding and supervision of his activities will be

possible in building up (when necessary) and in maintaining a healthy, harmoniously developed, active body.

3. It detects physical subnormality and defects when present, so that the student may be made aware of his condition and given proper advice and help in correcting the condition if correctible, or in adjusting the mode of living to individual needs if the defect cannot be overcome.

4. It at times makes it possible to assure students that they are organically sound and that certain mistaken ideas or fears are groundless.

5. It makes possible early detection and isolation of those who bring various communicable diseases to the campus. Not infrequently mild or missed cases of tuberculosis, smallpox, measles, scarlet fever, and diphtheria are detected in the course of the entrance physical examinations.

The required physical examination for entering students should be conducted during registration week. It should be made a part of the routine for registration. Additional physicians and nurses, if necessary, should be employed at the time, so that the physical examinations will be completed before regular college instruction begins. The old system of examining students by appointment, whereby some are not reached until the semester, often the year, is far advanced, has not proved satisfactory, especially where large numbers of students are concerned. The detection of communicable diseases of acute or chronic types which might have been found at the time of entrance may be delayed thereby. Furthermore, many students who need special attention, or whose physical condition is such that their activities should be limited, are not reached until the year is nearly over. Also, it complicates and handicaps staff arrangements and activities after instruction, dispensary, and hospital activities begin.

Entrance physical examinations should be coördinated or combined with the anthropometric, posture, and physical-capacity tests and examinations, which are of special interest to the departments of physical education.

Every health service should appreciate the importance of the entrance physical or health examination. The examination should be 100 per cent thorough in every respect. It is the first and a most important step in a constructive program of health promotion. The opportunity to impress the student with the importance of periodic health examinations should not be overlooked.

If several doctors take part in the entrance physical examination, each centering his attention on some part of the examination, when the

examination is completed one doctor should review the complete record of the student and give the student an inventory of his physical condition. He should give the student any needed advice or information regarding health matters, and, in case of defects or abnormalities advice regarding their correction. If possible an appointment with the student for further attention should be made when needed.

Opinions differ as to how many physical examinations should be required of a student during his college course. Many schools require the entrance examination only. Some require physical examinations annually. At one of the large universities where all college students were examined once each year for a period of four years, for some light on the situation, the findings indicated that few organic defects tend to develop during this four-year period, and that it is the entrance health examination upon which the chief emphasis should be placed. Therefore, as has been said, it should be thorough in every respect.

It is difficult to interest the average perfectly well college student in a strictly medical examination, especially if such an examination is required each year. If, however, after the very thorough first-year examination, the health examination is somewhat modified for the next year or so, and emphasis is swung somewhat to posture, strength, endurance, and capacity to do things dexterously, there is more interest on the part of the student.

There is rather too much truth in the usual caricature of the college student and faculty member as stoop-shouldered, hollow-chested, horn-bespectacled. Faulty posture and inactivity are harmful physical habits. One of the concerns of the health service and its associated agencies, physical education and athletics, should be to inculcate in all students a determination to have a sound, properly developed, active body. The college student should possess all those physical characteristics which stand for harmonious and healthful development, correct and assertive poise, dexterous and efficient motion. "He walks like a soldier" is decidedly complimentary. Why not develop a college or a university type of physique? Let the highest praise of physique and carriage be, "He has the bearing of a collegian."

The physical examination is an essential instrument not only in the positive program but also in dealing with the negative aspects of students' health. As everyone knows, it must be utilized in varying degrees for the diagnosis, treatment, and prognosis of almost all bodily disorders.

*Follow-up work.* To see to it that correctible defects and subnormalities found in students are corrected often requires no small amount of persistence on the part of the health service. Students, like other peo-

ple, are prone to neglect disorders not accompanied by pain or discomfort. They must be impressed with the importance of intelligent attention to correctible physical handicaps. This follow-up work should be in charge of some well-qualified member of the health-service staff.

*Reconstruction and rehabilitation.* Machineries for reconstruction, the correction of defects, should be arranged for or provided by the health service.

Physical subnormalities, defects, and aberrations fall into several categories as far as the causative factors are concerned. They may be hereditary, developmental, or congenital. They may be due to acute diseases, chronic infections, focal infections, malnutrition, injury, or faulty posture. The first step in reconstruction is to determine the ætiological factors. This requires the services of a well-trained physician. In addition, the advice and services of surgery, orthopedics, ophthalmology, and other medical specialties are often needed. Physical education can contribute to the correction of certain types of defects, especially those due to faulty posture and movement.

There is great variation in the many reports which have appeared in recent years relative to the frequency and kinds of physical defects or subnormal conditions found in college students. This is to be expected. Geography determines in a large measure the prevalence of goiter, for instance. Again, as a rule more physical conditions needing attention are found among students from rural districts than among those from cities. Moreover, the particular interests of the examiner may be reflected in his report. Also, the interpretation of the defect is of importance in statistical data. One examiner may report minor readily remedied conditions as defects, while another may not record them as such. If one should take into consideration all variations from the ideal physique, — harmonious development, posture, motor capacity, etc., — a very large majority would be found to be subnormal.

In the table on the following page, which should not be interpreted too exactly, an attempt has been made to average the number of defects found in young men and young women entering our colleges and universities.<sup>5</sup>

One student-health service reports that it has succeeded in getting 64 per cent of the students who had been examined and found to have correctible defects to respond to the corrective measures suggested. An entrance physical examination of 100 per cent in thoroughness and

<sup>5</sup> For a more comprehensive study of these defects see W. E. Forsythe, Health Services in American Colleges and Universities, University of Michigan, 28, No. 11, September 11, 1926.

efficiency, a 100 per cent follow-up system, and a 100 per cent reconstructive and rehabilitation program should be the goal in student-health work.

|  | PER CENT |
|--|----------|
| Vision . . . . .   | 30       |
| Hearing . . . . .  | 4        |
| Teeth . . . . .  | 25-50    |
| Nose: deflected septa, spurs, hyperturbinates, obstruction . . . . . | 10       |
| Tonsils: enlarged . . . . .  | 25       |
| infected . . . . .   | 6        |
| Chest — flat . . . . .   | 25-50    |
| Lungs . . . . .  | 5        |
| Heart: organic . . . . .   | 2        |
| functional . . . . .   | 15       |
| hypertension . . . . .   | 5        |
| hypotension . . . . .  | 1.5      |
| Hernia . . . . .   | 2.3      |
| Nutrition: overweight . . . . .                                      | 4        |
| underweight . . . . .  | 13       |
| Albuminuria . . . . .  | 5        |
| Glycosuria . . . . .   | 0.5      |
| Skin . . . . .   | 15       |
| Posture — spine . . . . .  | 25-40    |
| Flat feet . . . . .  | 15       |
| Orthopedic — other than flat foot . . . . .                          | 5        |
| Dysmenorrhea . . . . .   | 30       |
| Chronic complaints: headache . . . . .                               | 42       |
| indigestion . . . . .  | 28       |
| constipation . . . . .   | 22       |

*Bureau of records.* Of great importance are the health records. The record forms should have sufficient space for pertinent health points in family and personal history, for detailed record of the entrance physical examination, and for record of findings at the student's subsequent visits to the health service. The records should be accurately and conveniently filed, so that a student's health record is accessible whenever he or she consults a physician at the health service or whenever it is otherwise needed.

*Treatment and care of ill students.* Already the statement has been made that a student-health service differs from other public-health agencies in that it should arrange for or provide treatment and care of ill students, whether the illness is communicable or not. The prodromal, or early, stages of a number of diseases are similar, and an illness which presumably concerns only the individual victim may assume a community aspect later on. It is therefore important that the health service concern itself with all illness of students and isolate suspicious cases, for the good of both the individual and the group. Also, as has been said, it is important from several angles that all ill students be

made well and ready to carry on their work as soon as possible. An infirmary or hospital in connection with the dispensary is absolutely necessary in effective student-health supervision.

In many respects the dispensary is the most important single unit in the machineries of a student-health service. To it students should come for advice and service in disease prevention and health promotion and for the treatment of mild illness or injury. It should come into contact with and serve many students. Students should be encouraged to seek advice and treatment at the dispensary whenever they feel indisposed or whenever illness of any nature seems to threaten. Early attention to physical disturbances will contribute much to the personal welfare of the student, and at the same time will decrease the possibilities of transmitting communicable disease.

The average of visits made by students to the health-service dispensaries in fourteen of our leading educational institutions where student-health services have been maintained for a number of years was 4080 per year per 1000 students enrolled. This means that a college or a university of, let us say, 3000 enrollment should have dispensary facilities for handling approximately 12,000 annual visits or 50 to 60 visits per day. The number of visits by students to the dispensary will depend in a very large measure upon the physicians in charge.

In some instances institutions provide only for dispensary service and room calls. Bed cases are cared for at the student's rooming house or dormitory or sent to a local hospital. This is unsatisfactory for several reasons. Often students come to the dispensary with a temperature, a heavy cold, or some indisposition which, though probably not serious, should be watched. They are not ill enough to be sent to a general hospital, but usually cannot be given at their rooming place the care needed. To safeguard their own health and often that of their associates they should be put to bed and cared for while under observation.

Also, not infrequently students play or work unwisely or have difficulty in adjusting themselves to the exacting conditions of college or university life. Sometimes such a student becomes discouraged and upset nervously. While not a hospital case in the usual sense, he may need isolation, rest and quiet in bed, with special care and food. At times twenty-four hours or so of such rest and care, followed by a little help in making some adjustment, send the student back to work with restored confidence and vigor. Failing to get this needed help at the right time, not a few students either break down, give up their college work, or drag along doing work far below the standard they might attain.

One must not overlook the fact that students are usually immature and that many are away from parents for the first time. They are usually unacquainted with the machineries of medicine, and when taken ill are often timid about asking advice, yet easily alarmed over their condition. In dealing with sick students it is often necessary to combine with scientific care a certain amount of parental interest.

The treatment and care of ill students uses up most of the student-health budget. Students look upon the required annual health fee, which is the usual source of the budget, as sickness insurance. They usually feel that it is the function of the health service to take them through any illness they may have without additional cost to them. A student-health service is judged almost entirely by its capacity and efficiency to serve in case of illness or injury. This phase of the work is tangible. It can be seen and judged.

Generally speaking, some limitation must be placed on the amount of medical and hospital service that can be given each student in return for his health fee. Otherwise a considerable proportion of the total income from health fees will be spent on relatively few students with serious or prolonged illnesses or requiring major surgical operations. When this is done, the interests and activities of the health service for the promotion of the health of the student group as a whole are curtailed. Some health services specify that not more than one week or two weeks can be given. As a rule, extra charges are made for special service. The extent and character of the service that can be given a student without extra costs must be determined by the health service concerned. The amount of the regular health fee, the availability and costs of clinics and hospitals, the attitude of the local medical profession, and other factors must be taken into consideration.

The important thing is to see to it that the total income from health fees is so used as to cover best the health needs of the entire student body. The health service must ever keep in mind the idea that their's is a health service as contrasted with sickness insurance.

*Vaccinations and inoculations.* It should be one of the objectives of the personal division to see to it that all students are protected from those communicable diseases for which we have specific prophylactic measures.

All unvaccinated students should be vaccinated against smallpox during the course of their entrance physical examination. A number of institutions rightly include this as a requirement for admission. Many students coming from certain sections of our country, especially from rural districts, have not been vaccinated when they enter college.

Epidemics of smallpox which may take on grave forms are possible in institutions where a large number of students have not been vaccinated.

Compulsory inoculation against typhoid is perhaps not advisable, but all students should be informed regarding the efficacy of such inoculations in preventing the disease.

Much is being done, especially during childhood, with specific prophylactic treatment against diphtheria and scarlet fever. While it is not advisable to insist on these specific preventive measures for college students, the inoculations should be available in times of epidemics and exposures, and students should know about them.

As is readily seen, various interests and activities outlined under personal attention bear directly or indirectly on group health as well, in the prevention and control of communicable diseases. Also, group-health activities bear on the health of individuals making up the group.

### SANITATION

Sanitation measures in student-health work should include adequate attention to both campus and off-campus sanitation.

Communicable diseases are transmitted by direct contact and through water, milk, food, insects, and, in some instances, animals. Probably 95 per cent of all communicable diseases among students are direct-contact infections. In student-health work, blocking this particular route is covered for the most part through personal attention and by the interests and activities connected with health education. The prevention of communicable diseases which travel over other routes (water, milk, etc.) is done largely through sanitation measures.

As has already been said in "A Constructive Student-Health Program," the dangers of the water, milk, food, and insect routes of disease transmission have been decreasing in recent years. This is due to the advance in knowledge relative to water purification, sewage treatment, garbage disposal, milk pasteurization, the preparation and handling of foods, and so on, and to the fact that the number of people appreciating the importance of protective measures in connection with these matters is increasing. In most college and university communities these possible indirect routes of disease transmission are supervised more or less effectively by municipal health departments. From time to time, however, diseases are still transmitted over these indirect-contact routes and by the so-called carrier employed in handling, preparing, or serving food. A trained sanitarian connected with the health service and coöperating with community-health agencies can do much to minimize dangers to student health from these sources.



*Value of supervised dormitories and dining halls.* In addition to adequate attention to possible indirect-contact routes of infection a number of matters not directly related to disease, but rather to the well-being and comfort of students, should receive attention; for example, the living conditions of students with reference to room space, furnishings, air conditions, light, toilet facilities, and environment. Properly built, properly equipped, and properly managed dormitories, dining-rooms, and refectories, sufficient for all students, contribute greatly to effective health supervision and to the general well-being of students.

University owned and controlled dining rooms to accommodate all students are especially important. We are beginning to appreciate the value of proper nourishment to health and to efficient mental and physical work. In addition to providing students with wholesome, nourishing food it is important to teach them the amounts and kinds of food that are essential. The menus of campus dining rooms might well include information regarding the foods served, as measured in calories, vitamins, salts, etc., and information relative to our present knowledge of balanced diet.

When an outboard motor is purchased, an early concern of most owners is the proper mixture of gas and oil for a smoothly running motor and for the best mileage obtainable from a given amount of the mixture. The food requirements of the human motor for health, energy, efficiency, and endurance should be an important consideration in food indigestion. Colleges and universities should lead in this important matter by supplying proper nutrition and teaching relative food values and needs so far as we yet understand these.

When students are compelled to live in rooms promiscuously provided by proprietors whose chief interest is the monthly rental, conditions are usually far from satisfactory. Large numbers of students are compelled to live as cheaply as possible. Improper air conditions, — including heating, humidity, and ventilation, — overcrowding, insufficient toilet facilities, poor lighting, and uncleanness are the lamentable conditions in many rooming houses. Likewise, large numbers of students patronize dining rooms and lunch counters which are operated for gain at the expense of proper food and service, where nutrition as a science is ignored.

We are not unmindful of the rôle that dormitories and dining-rooms play in student social life as well. That these buildings solve many perplexing problems relative to the student's life in general is obvious, and that they can be operated on their income or even be of financial value has been demonstrated in many institutions.

*Survey.* A survey of the students' environment, both campus and off-campus, should determine in a large measure the activities of the sanitarian. This survey should embrace the water, milk, and food supplies, sewage and garbage disposal, the outdoor environment in relation to the breeding of insects, especially flies (although in some areas other insects and parasites are of importance), housing conditions, eating places, and the general environment.

*Campus sanitation.* For each building on the campus utilized by students a voluntary health officer — some interested member of the faculty who occupies the particular building for the greater part of his time — can be a valuable aid. He can supervise in general the carrying out, in his building, of regulations pertaining to ventilation, light, toilet facilities, janitor service, etc. Convenient boxes placed in each building to receive suggestions, complaints, and recommendations relative to the improvement of conditions are sometimes utilized to advantage.

For the buildings and campus as a whole, the one in charge of sanitation should coöperate with the superintendent of buildings and grounds and the voluntary health officers for the various buildings. Meetings from time to time to discuss problems of sanitation contribute to the effectiveness of the program.

It is difficult to formulate general regulations for campus buildings. One building may reflect the sanitary conception (if there was one) of fifty years ago, while another may be constructed in accordance with the latest ideas of sanitation. Again, buildings utilized for different purposes need different codes of sanitation. The following general regulations pertaining to campus sanitation may, however, be adopted :

#### REGULATIONS FOR CAMPUS SANITATION

1. Spitting on the walks of the campus, on the steps of a university building, or on the floors of the halls or rooms of any university building is hereby forbidden. Violation of this rule will render the offender liable to suspension from the university. It shall be the duty of all officers and employees of the university to report violations of this rule to the health service. (Spitting in public buildings violates the law in most states.)

2. Classrooms shall be swept and dusted after the class periods of the day are over. Sweeping compound or some other material for allaying dust shall be used in sweeping. All blackboards shall be thoroughly cleansed, unless otherwise indicated, at the close of the day. The crayon dust which accumulates on the catch board must be thoroughly removed at the close of each day's work.

3. Rooms must be thoroughly ventilated between class periods. (Electric fans may be used to accelerate this ventilation.)

4. Thermometers shall be provided for all classrooms, and the temperature should be held at 68–70° F. when the rooms are in use. Provisions should be made for increasing the humidity of rooms which are excessively dry.

5. The voluntary health officer of buildings which contain large assembly rooms must be notified beforehand of proposed meetings. He shall then make provisions for the best possible ventilation of assembly rooms during use.

6. All lockers used for clothing must be thoroughly cleaned and disinfected at least once each year, and always upon the transference from one student to another.

7. All clothing kept in lockers must be kept in sanitary condition.

8. A bacteriological examination of the water of swimming pools shall be made once each week, or as frequently as is deemed essential. The pools when found to be unsafe will not be open to students.

9. Lavatories and latrines shall be thoroughly cleansed daily and as often as is necessary.

10. Specific sanitary regulations to meet the particular demands of certain buildings may be formulated and enforced by the director of the health service, the sanitary inspector, and the voluntary health officer.

11. The sanitary inspector shall coöperate with the superintendent of the buildings and grounds in keeping the buildings and grounds in the very best sanitary condition.

*Off-campus sanitation.* Particular conditions demand special regulations. In general, however, regulations similar to those which follow would apply, to be met, so far as possible, by student rooming and boarding houses on the approved list, the rating given each to depend upon the degree to which the requirements are met.

#### REGULATIONS FOR APPROVED ROOMING HOUSES

1. *Heat.* Study rooms should be heated by hot water, steam, or hot-air systems. If a gas stove is used, the gas connections should be metal, and the fumes should be carried from the room by pipe or chimney. While occupied, rooms should be kept at a temperature of from 68 to 70°. (If the inspector uses a scale of 100 points in rating rooms, 20 points might be given for observance of heat regulations.)

2. *Humidity.* Since overdry atmosphere in a room apparently contributes to respiratory disturbances, steps should be taken to supply water vapor by means of evaporation tanks, in connection with hot-air systems, or by other measures. (5 points)

3. *Ventilation.* It is desirable to have 1000 cubic feet of air per occupant; direct outside air; cross ventilation; transoms; windows; window ventilators. (15 points)

4. *Lighting.* Direct outside light; window area at least 20 per cent of floor area; shaded electric table light; mantle and frosted globe for gaslight if used. (15 points)

5. *Cleanliness of rooms and halls.* Clean and satisfactory bedding and mattress; rugs; use of vacuum cleaner; washable draperies; general appearance of rooms and halls. Rooms should be cared for daily and thoroughly cleaned once each week. Mattresses should be well aired at least once each week and always thoroughly cleaned and sunned upon change of tenants. (15 points)

6. *Bathroom.* One bathroom for each five persons; satisfactory plumbing; cleanliness; hot water; on same floor as bedrooms; outside ventilation. (10 points)

7. *Furnishings.* Single beds; study table or desk; shaded electric light for table; study chairs and easy chairs; adequate drawer and closet space. One bed to a room is preferable unless sleeping porch is provided. Where two beds are in one room, there should be six feet between them if possible. (15 points)

8. *Building.* Upkeep; halls, stairways, and basement; general appearance of house and surroundings. (5 points)

9. *Fire protection.* Accessibility to exits, fire-escape third floor and above.

10. *Drinking water.* From an approved source.

11. *Inspection.* All rooms and houses used by fraternities, sororities, and clubs, and all approved student rooming and boarding houses, should be open to the health service for inspection.

12. *Complaints.* Students should enter complaints at the health service or housing bureau when they think regulations are not being observed. Immediate attention should be given to such complaints.

#### REGULATIONS FOR APPROVED BOARDING HOUSES

1. All rooms where food is stored, prepared, or served to students must be kept thoroughly clean and screened against insects and animals.

2. No privy vault, open cesspool, hogpen, or chicken pen shall be permitted within 50 feet of any room used for storing, preparing, or serving food.

3. All garbage must be placed in covered sanitary receptacles and removed from premises at least three times a week.

4. All water used for cooking, washing dishes, or drinking must come from sources approved by the health service.

5. Dishes and cooking utensils must be kept in a clean and sanitary condition.

6. All persons preparing or serving food to students shall obtain a certificate of health from the university health service.

7. All persons preparing or serving food to students shall keep themselves in a neat and clean condition. Every effort must be taken to assure the most rigid personal cleanliness.

8. The name of the dairy furnishing the milk used and served must be filed with the university health service.

In the enforcement of regulations an inspection of rooming and boarding houses should be made by a representative of the university health service, in conjunction with other agencies concerned, at least once each year or as often as is deemed necessary. A list of the rooming and boarding houses approved by the university health service, together with ratings, should be on file at the university health-service office or at the housing bureau. When necessary there should be coöperation between the university health service, the state board of health, and the city health and fire departments in making and enforcing regulations.

The work of the health service can be facilitated by a voluntary health officer (either the matron or an interested house member) in each sorority, fraternity, dormitory, coöperative club, boarding-house, and rooming-house, appointed by the particular group concerned. These officers should be made familiar with the regulations which concern their organization, and close coöperation should exist between them and the health service. Outbreaks which might lead to serious epidemics may be readily checked by intelligent action on the part of these voluntary health officers.

### HEALTH EDUCATION

The third interest in student-health work, and one which should permeate all its activities, is educating students in the fundamentals of health promotion and of disease prevention and control. As in every other activity for human betterment, the most genuine and far-reaching results are to be obtained through education.

Two types of health education should be carried on in our colleges. The one is group or class instruction through general courses in anatomy, physiology, and hygiene (See "General College Course in Hygiene"); the other is individual instruction as occasions arise in the course of physical examinations, follow-up work, and consultations for advice and treatment, — usually the only time when the student is particularly interested in or feels the need of such instruction. The term "student-health service" signifies, primarily, interest in health promotion and in disease prevention.

The student's newspaper can frequently be used for succinct, timely health hints contributed by the director or other members of the health-service staff. Also, numerous voluntary and official health agencies furnish, free, attractive and authoritative pamphlets on many phases of health promotion and disease prevention and control which may well be available at the health service. Attractive placards and posters on health can be hung on the walls of the halls and of the waiting and dispensary rooms of the health service, so that he who runs may read. Occasionally special public-health lectures, health films, etc. should be put on.

Individual instruction should be correlated, in so far as it is feasible, with group instruction in hygiene. The director of the health service, wherever this is feasible, should be the professor of hygiene and public health, and the staff of the health service should be utilized in conducting group instruction in hygiene. (See "The Division of Hygiene, Public Health, and Physical Education.")

## PERSONNEL AND EQUIPMENT

In the foregoing consideration of the objectives, interests, and activities of a student-health service, personnel and health machineries far beyond the means or needs of the small college seem to be called for. What the writer has attempted to do is to cover as comprehensively as possible what student-health service should mean and what we should work toward. It goes without saying that in many of the small colleges the part-time service of a local physician for one or two hours of dispensary work a day makes up the student-health service. In some a nurse is employed who refers students in need of medical attention to local physicians. In other institutions the department of physical education, with a physician at the head of it, supervises student health in general. Occasionally some member of the teaching staff of biology or of physiology directs this work. The important thing is that the one in charge of student health be adequately trained for the work and that he or she possess a comprehensive view of the aims and objectives in student-health work,—disease prevention, health promotion, and health education,—not only for academic efficiency but also as these bear on health and physical efficiency for the years after graduation.

*Physicians.* It should be the aim of each college to have at the head of its student-health service a well-trained physician who is either giving all his time to the problems of student health or has charge of this work in connection with teaching some related subject.

The physician selected to do or to superintend student-health work should be thoroughly trained in modern scientific medicine,—diagnosis and treatment. He should possess a keen working knowledge of the principles and practices of health promotion and disease prevention and control. He should be interested in preventive medicine and in the problems of student-health work. He should be a teacher, for student-health work includes both individual and group teaching. He must have understanding, patience, tact, and tolerance. Finally, he should have a broad vision of a comprehensive and constructive program for student-health conservation and promotion. In the small college he is often the entire health service and must make provision for all the interests and activities which come under personal attention, sanitation, and education.

In general one may state that one full-time physician should be employed for each 1000 students enrolled. Where more than one physician is employed, one should be chosen as director of the student-health service. The services of a woman physician are especially

desirable in connection with the physical examination of women and in rehabilitation and reconstruction work among women students. The relation of the student-health service to the schools of medicine, dentistry, etc., when these are maintained in the university concerned, is considered under "Relation of Health Service to Other Agencies and Schools."

*Nurses.* Next to the physician in importance, in student-health work, is the nurse. If students are hospitalized at the student-health service the demands for nursing service are decidedly increased, as nurses are then needed both for attendance in the dispensary and for hospital nursing. They can be used also for visiting outside sick students, inspecting rooming houses, etc.

*Laboratory service and sanitation.* It is of course essential that laboratory and X-ray facilities be available for diagnosis. If the service arranged for warrants it, there should be a well-equipped laboratory and X ray in connection with the dispensary and hospital, and a well-trained technician employed. The technician can in some cases serve as the sanitarian as well.

*Quarters and equipment.* Suitable quarters conveniently located should be provided. If the service is to include not only advice and the treatment of ill students but also care, adequate provision must be made for (1) a dispensary with a waiting room and examination and treatment rooms (in general one may anticipate 20 visits per day per 1000 students enrolled); (2) hospital quarters (for noncontagious illnesses, 5 beds per 1000 students enrolled, with some latitude in case of an epidemic; and, in addition, adequately isolated quarters for contagious diseases or suspected cases); (3) a well-equipped laboratory which can be utilized in both the personal attention and sanitation work; and (4) necessary office space. The dispensary and hospital in connection with student-health supervision are considered at greater length under "Treatment and Care of Ill Students."

A three-story building can be arranged to serve the needs well. The first floor should include the necessary space and equipment for physical examinations and dispensary work, laboratory, and office; the second floor should be arranged for hospitalization of the general non-contagious illnesses, and should provide both wards and private rooms; the third floor can be utilized for isolation purposes.

Little if anything need be said about the equipment, which is that needed for physical examinations, dispensary, and hospital work. It is wise to begin modestly and let the needs and the resources determine the acquirement of extra equipment.

## FINANCING STUDENT-HEALTH SERVICE

It is desirable that the health service be financed through annual fees paid by the students. When students pay a health fee, they do not feel that medical attention given them at the health service is gratuitous. An annual fee should be required of all students, whether they are residents of the community or come there for their college work. Voluntary health fees will not support a health service. It is not a characteristic of the average human being voluntarily to put aside money for use in case of illness. The entrance examination alone is often worth more than the whole health fee; moreover, the student-health service usually does enough in the prevention and control of communicable diseases and in general student welfare work to justify its support by all individuals in the group, whether this is recognized by the students or not.

In the earlier days of the student-health-service movement, when it was interested largely or wholly in sanitation or in the very rudiments of personal attention, such as the one to two hours per day of dispensary service, the required health fee was relatively small. It ranged from 50 cents to one or two dollars per semester. But as students came to depend more and more on the health service for advice and service in matters pertaining to health, dispensary hours were increased. It was soon realized that some readily accessible beds were often imperative for effective health supervision (see "Treatment and Care of Ill Students"). With the increased service a larger budget was naturally needed. In addition the cost of maintaining a modern dispensary and hospital, with attendants, equipment, etc., has increased threefold in recent years. It has been necessary, therefore, to increase the student-health fees from time to time in order to keep up with the increasing demands made on the personal division and with the increasing costs of such service. Furthermore, with the growth of the positive health idea, which calls for activities along the lines of various health factors considered under "Health Promotion," additional funds are needed.

When we examine into the health interests and activities, and the resultant student-health fees in our colleges and universities, we find considerable variation. The fees range from \$1 to \$20 a year. The writer is informed that one institution contemplates making the health fee \$30 a year. Where health fees are low the activities of the personal division are limited chiefly to advice, first aid, or dispensary treatment; special service, medicines, and hospital care must be paid for by the student. Where the fees are higher, a more extensive service, including hospitalization within limits, is provided.



Just how much service should or can be given to students is not a settled matter. The size and type of the institution, whether or not there is a medical school connected with it, the extent to which physicians in the department of hygiene and other departments work also in the health service, all have a bearing on the student-health program, on its annual budget, and consequently on the health fee. The most satisfactory health service would be that which could arrange for or provide all service to all students whereby everything possible would be done to prepare the student physically for years of service to society. After all, should not this be an important objective in educational institutions? This would mean, however, in addition to adequate instruction in the fundamentals of health promotion and disease prevention, so far as we yet understand these, unlimited highly skilled service (medical and surgical) in all illness, in the correction of physical defects and potential physical handicaps, and in the promotion of health in general. Very few if any student-health services can do this; the cost is prohibitive; and there are other angles to the problem, which cannot be considered here.

#### GENERAL COLLEGE COURSE IN HYGIENE

While health education, as has been said, should enter into the various contacts of the health-service staff with students as occasions arise, there is need for general courses in anatomy, physiology, and hygiene which will give students a working knowledge of the structure and functions of the human machine and its needs in the maintenance of health and physical efficiency.

Many institutions include in their curricula a course of some sort in hygiene. Too frequently, however, the one who gives the course has had little or no training in the sciences concerned with health and disease. Traditions and empiricisms are handed out as scientific dicta. In general one may say that taking plenty of exercise, the twice-daily brushing of teeth, sleeping with windows open, deep breathing, mastication à la Fletcher, drinking plenty of water, proper elimination of the body's waste matter, bathing, clothing, and sex hygiene form the subject matter of the average college course in hygiene as presented by the predominating type of teacher. Even these topics are presented in an unconvincing manner to an uninterested or even antagonistic group of freshmen who are required to take the course and who are more or less familiar with these topics, having been inoculated with them or against them while in the elementary and secondary schools.

*Qualifications of the instructor.* A college course in hygiene should include intelligent consideration of both health promotion and disease

prevention. In order to do this an instructor must be able to give due emphasis to many health factors. He must also possess adequate knowledge regarding the nature, source, and classification of diseases, the routes over which communicable diseases travel, and the general and specific measures for blocking these routes. As a foundation, therefore, he should have an adequate knowledge of normal vital processes and a working knowledge of pathology, bacteriology, psychology, and psychiatry.

The human being presents at least four aspects, or facets, so far as health is concerned. These are the anthropological, the psychological, the sociological, and the immunological. The instructor should be able to appreciate, by virtue of his training, these various facets, the part they play, and their interrelations in constructive health work.

Future health work will concern itself more and more with the quality and quantity of population. Heretofore health activities have been expended largely in dealing with and alleviating untoward conditions of society, with little effort towards a genuine program of prevention. Improvement of the quality of mankind is the consummate of a preventive program. The instructor of a college course in hygiene, therefore, should appreciate the contributions of such sciences and interests as genetics, eugenics, and population.

We have much to learn regarding health promotion and disease prevention. Research and investigation along many lines are adding new knowledge from time to time. The teacher of hygiene should not only know the latest developments in his field but, through investigation and research, should make contributions himself.

Finally, in addition to adequate scientific training, vigilance in keeping up with the advancements in the various sciences and interests which concern modern hygiene, and an inquiring mind, a teacher of hygiene should be one who has the capacity and desire to influence his students to live the laws of health so far as we know them. Unfortunately the spirit and atmosphere of our time are against an attempt on the part of a teacher to influence students. Dr. Richard Clark Cabot, in differentiating between teaching *about* ethics and teaching ethics, says, "Teachers are in good form when they modestly present the facts, as science is supposed to, without bias. To try by our teaching to influence any student to act in any particular way would be an invasion of his rights." This deadhouse pedagogical attitude is ineffective in teaching hygiene, as well as in teaching ethics. Merely giving the accepted facts about hygiene is teaching *about* it; influencing a student to apply these facts to his own life, to give intelligent attention to the fundamentals of healthful living, is teaching hygiene.

*Social aspects should be emphasized.* In a college course, hygiene should be presented more as a social problem than as a personal one. The personal aspects can be brought out in connection with the social aspects. It is difficult to interest college students in hygiene as a personal problem. As a rule they are in the very hey-day of health, and feel little need of concern for something with which they are richly endowed. It is not so difficult, however, to interest students in hygiene and public health in relation to society and its needs.

A classified list of the causes of death in the United States and the value of these statistics as range-finders in health work, and a consideration of the social and economic loss due to illness as shown by various surveys of age groups from the pre-school child to adults, when properly presented interest the college student and help him to understand and appreciate the need for interest and activities in public health. A study of the relation of poverty to mortality and to morbidity, and a realization of the fact that our future security and leadership as a nation depend in a large measure upon a sound and vigorous citizenry, make for a social point of view and a sense of personal obligation to society regarding both individual and community health.

In the study of the causes of morbidity, untimely deaths, physical defects, inefficiency, and social maladjustments in general, and of ways and means for the prevention of various factors which contribute heavily to these causes, the various approaches to health promotion which are usually presented as personal hygiene, and the methods for controlling communicable diseases (community hygiene), can be given consideration and emphasis.

*Projective idea.* As has been stated, students should be impressed with the need of intelligent attention to health, that they may safeguard and promote health and physical efficiency not only in youth but in later years as well. Approximately eighteen years have been added to the average length of life during the present century. This has been brought about largely through marked reduction in infant mortality and through increasing mastery over bacterial diseases, especially the communicable diseases which took such a large toll of childhood and youth. More people than ever before, therefore, reach manhood and womanhood. Little has been accomplished, however, in improving the health span of adults. As a rule, people begin to break physically around the ages of forty and fifty years, — a time when they should be of the greatest social and economic value. To quote the statistics of Forrest Dryden: Take 100 young men (twenty-five years of age) in America who are sound in every respect physically, and project their lives forty years. In other words, see what will have happened to them

at the age of sixty-five years. Only 64 will be living. Of the 64 living, 1 will be rich; 4 will be well-to-do; 5 will be supporting themselves by working; the other 54 will be dependent wholly or in part upon relatives, friends, or society. Health, or lack of it, is one of the factors in the conditions shown by Dryden's statistics; hence the importance of teaching hygiene in a projective sense and of interesting students in helping improve these conditions.

#### RELATION OF PHYSICAL EDUCATION TO STUDENT-HEALTH SERVICE

Attention has been called to the fact that the earliest effort directed toward the improvement and conservation of student's health centered in "physical training." Two national systems, the German and the Swedish, played important rôles in the history of physical training in the United States. These systems were conceived and nourished in their respective countries in an atmosphere of war and preparation for war, the objective being the development of strong, vigorous bodies, especially on the part of the young men of the land, for military purposes.

Although there were earlier attempts to establish physical training in the United States, it may be said to have found a place in our colleges and universities in 1860, when Harvard, Yale, and Amherst erected gymnasiums and introduced physical training largely influenced by the German, or Jahn, type. At Harvard and Yale it was elective. President Sterns of Amherst, however, impressed with the "poor physical condition of students" in general, determined to graduate his students in "perfect health." Four times a week, for a period of forty minutes, each Amherst class was required to assemble in the gymnasium for exercise.

It is important to bear in mind, however, that physical training, or "culture" (emphasizing physical exercise, which later took on the more dignified name of "physical education") was introduced as a health measure in our schools before the sciences now making up modern medicine, hygiene, and public health were as developed as they are today. Through the contributions of anatomy, physiology, biochemistry, bacteriology, pathology, and closely allied sciences came an appreciation of the facts that there is no single approach to health and physical efficiency, and that there are many factors which are of greater importance to health and physical efficiency than is physical exercise. Also, we know that the health aspects of exercise are easily lost sight of in interest and enthusiasm for performance, skill, competition, and mastery.

"Physical education" failed to keep up with and apply the important contributions of the sciences with reference to health, and thus failed to serve adequately the health needs in our schools. Instead it

became largely engrossed with methods and technique of exercise. Much time was given to discussions regarding the relative merits of the German (Jahn, or heavy, gymnastics), the Swedish (Ling, or light, gymnastics), and modified systems devised in the United States by certain physical-culture enthusiasts.

With the rise of the play and athletic movement, from 1890 to 1900, the more or less formal systems of physical training suffered a severe blow. The play movement, especially competitive athletics, rapidly gained tremendous momentum and soon completely overshadowed the traditional systems. This was to be expected, because play (games and sports, particularly competitive athletics) appeals to a fundamental human impulse toward, and interest in, physical emulation, rivalry, competition, and mastery. Furthermore, this impulse and this interest can be gratified not only through actual participation in the contest but by representation, — transferring one's interest to a chosen contestant or team. Hence the rapid rise and domination of athletics, professional, intercollegiate, and interscholastic, and the building of bleachers and stadia seating many thousands of enthused spectators. In this day of the newer psychology one must be cautious in the use of such terms as "instincts" and "emotions." If one is permitted to use them, however, one may say that physical education, and particularly sports and athletics as maintained in our schools, are largely in the emotional field. The strong desire for mastery or winning plays no small part in creating the situation. The emphasis has been for some time, and still is, too much on unusual skill in competitive sports and too little on the health and recreation needs of the students in general, in proper relation to their college work. In most schools there is over-emphasis on special physical training on the part of some students, often to the neglect of their college work, and too much concentration, on the part of the staff, on the training of comparatively small groups of possible participants in our colorful, crowd-drawing intercollegiate contests. Intramural athletics have been introduced and are being developed now more than ever before, to give all students opportunities for recreational games and sports. In some schools intercollegiate athletics is contributing generously, from its ample funds, to the intramural program.

To the ranks of physical-education teachers, especially after the emphasis swung to play and athletics, there was a large influx of play enthusiasts, — teachers whose interests were largely of the instinctive and emotional type. They loved physical prowess and competition. They were interested in technique and methods of exercise and games, but were not prepared to keep abreast of and apply contributions to our

knowledge of health needs as made from time to time through the various sciences bearing on these needs. Their training did not fit them to develop or carry on a comprehensive student-health program, which demands intelligent attention not only to exercise but to many other health factors.

The need of the prevention and control of communicable diseases, of advice to, and treatment and care of, ill students, and of scientific attention to actual and potential physical handicaps as revealed by health surveys of the student-age group, called for health agencies other than the usual staffs of departments of physical education. These other agencies are physicians, nurses, trained laboratory workers, etc. who form the student-health service. In most schools, then, there is a department of physical education, interested in exercise and recreation, one of the many factors contributing to health, but emphasizing as well other interests and activities not directly related to student health, and the student-health service, interested in the prevention and control of disease and the promotion of student health through attention to many factors. There are certain matters or activities in which both are interested, but many activities and objectives of each are outside the interest or training of the other.

In physical education the interests and objectives emphasized which are only indirectly or remotely related to health, and which lie largely outside the direct interest of the staff of the student-health service, include the Greek ideal of body form (harmonious and symmetrical development), neuromuscular control (precision, muscular pliability, agility, dexterity, skill), activity, performance (physical capacity, strength, endurance), recreation, and certain "mental, moral, and social by-products." Many physical educators maintain that the mental, moral, and social values gained through participation in play, games, sports, and athletics are among the most important objectives in physical education. The staff of the student-health service, on the other hand, must give scientific attention to many matters concerning student health which are outside the domain of the general staff of physical education, — matters which cannot be handled by a physical educator unless he is a trained physician as well.

Among the interests and activities in which both are necessarily concerned are the following: (1) The physical examination of students and the findings thereof. Physical education will emphasize certain anthropometrical measurements and capacity tests, while the health service will be interested in the medical aspects of the physical examination. Of course, the programs of both must be based on the findings of the physical examinations. (2) The bureau of health records. One

set of records should serve both physical education and the student-health service. The importance of keeping complete records and utilizing these in the planning of students' programs cannot be over-emphasized. To maintain separate records for physical education and for the health service is both expensive and unnecessary. (3) The prevention and correction of defects. Physical education can do much with certain types of posture and functional defects. The health service must handle others. (4) The promotion of health. The various factors in health promotion have been considered, and it has been stated that the concern of physical education is with the physical exercise and recreation factor, while other factors must be included in the interests and activities of the health service. These parallel and divergent interests and activities are illustrated in the diagram at the end of this chapter.

Both have a common objective,—student health; yet in some colleges and universities, where the two are entirely separate and independent, there is lack of understanding, sympathy, and coöperation.

#### DIVISION OF HYGIENE, PUBLIC HEALTH, AND PHYSICAL EDUCATION

While the student-health service must provide or arrange for the scientific treatment and care of ill students, it should be interested primarily in health promotion and in educating students in the fundamentals of healthful living and disease prevention. Its work should be correlated with that of the department of hygiene and public health. If maintained as an integral part of a school of medicine or dominated too much by the curative aspects of medicine, there is danger of losing some of the emphasis on preventive medicine, which should permeate its program. Furthermore, much of the work of the student-health service is and should be hygienic,—including the physical examination of entering students, follow-up work, the prevention and correction of potential physical handicaps, as well as measures for the prevention and control of communicable diseases, sanitation, and education.

The student-health service can be regarded in a measure as a laboratory for teaching hygiene. Its interests, activities, and machineries should be studied by students taking general-hygiene courses and by students preparing to be public-health workers and social workers in schools offering such training, as well as utilized by students when needed.

The program of physical education, also, dealing as it does with exercise and recreation (which, when suited to the needs of the individual student, contribute to his or her health), should be correlated with the general program for student-health promotion and conservation.

There is need for coöperation at various points in the general health program, as brought out in "The Relation of Physical Education to Student-Health Service." The activities of both should be based on the findings of the physical examinations and the health records of the students. These records should be available to both, and the organizations of these agencies should be such that ready and understanding coöperation in the correction of certain physical defects or subnormal conditions is forthcoming.

Grouping in one division the general hygiene teaching, the student-health service, and physical education makes for a correlated, constructive, and comprehensive program for student health and physical efficiency. Joint staff meetings held at intervals for a discussion of student-health needs promote understanding and coöperation.

It is needless to state that the head of such a division should be a physician who is not only scientifically trained in both curative and preventive medicine but who appreciates what contributions each student-physical-welfare activity should make to the student-health program as a whole. Not only should he understand clearly where and when these activities fuse and how to fuse them, but he should understand and appreciate the divergent or independent interests and activities of each. He must not only be thoroughly trained in the field of medicine and public health but should be interested in investigation and research along health lines.

#### RELATION OF HEALTH SERVICE TO OTHER AGENCIES AND SCHOOLS

The director of student-health work should be a member of the general administrative body of the college or university. He should be in touch with the general program of the institution and have the interest and coöperation of the other administrative officers in his part of that program. It is a mistake to attempt a constructive student-health program isolated from the other educational interests of the college or university. It too is an educational matter and an important one.

There should be coöperation between various agencies in charge of matters that may bear on the health and physical welfare of the students. A representative of the student-health-service staff on committees or coöperating with other agencies dealing with matters in which student health and physical welfare may be involved can often help in handling certain situations which arise from time to time. Also, such contact contributes to the effectiveness of the health service.

For example, a member of the health-service staff should be appointed to serve on or coöperate with the committee dealing with stu-



dent delinquency. Illness is one of the common excuses given by students for failure in class work. Often this illness is not organic but is rather a symptom of emotional instability due at times to difficulty in making proper adjustment in some phase of university or individual life. The student-health service, with its interest in mental hygiene and with its health records of students, can be of value to the university administration in such matters. Sometimes mental hygiene properly applied can help the student to pull himself together and carry on his work satisfactorily. Not infrequently students are advised to give up their work for the time being and go home because of imaginary ill health when this might be avoided. All possible resources of the university should be utilized to help the failing student get hold of himself and his work before the doors of the institution are closed to him. Too many people with imaginary ill health now burden families or society.

Also, the health records of above-the-average students who wish to carry unusually heavy work should be considered in connection with their schedule.

Again, as has been suggested, a representative of the health-service staff coöperating with the committee or bureau in charge of the housing of students etc., if such a committee or bureau exists, can contribute to the effectiveness of this work.

When schools of medicine and dentistry are maintained in the university, close coöperation should exist between these and the health service. The benefits to be derived from this coöperation can be mutual. At one university the following relationship has been worked out. The health service has established a system of graduate fellowships in the clinical departments of the medical school, in the department of hygiene and public health, and in the dental school. These fellowships in the medical school are open to selected graduates of recognized medical schools who have successfully completed internships and who are specializing in some particular clinical science. Each fellow devotes two, three, or four hours per day to the student-health service, particularly the dispensary, and the remainder of his time to postgraduate study and research in the department in which he is specializing. The health service pays for the fellowships. In general the medical service rendered at the health service by these part-time energetic, ambitious physicians, specializing in a particular field, is more satisfactory than is the work of physicians who are employed to give all their time to the long, arduous daily routine of examining, advising, and treating students who are, for the most part, ambulatory patients. Also, by this arrangement, through the "fellow," who is chosen by the head of the clinical department and approved by the

head of the health service, the personnel and facilities of the clinical departments in the medical school are available when expert and special treatment is needed. A serious surgical case, for example, receives the direct attention of the head of the department of surgery, who, through his graduate fellow, has charge of all surgical cases among students. This is true also for the other clinical departments. In addition to assuring the highest type of medical and surgical service for the students, this arrangement stimulates postgraduate and research work in the various clinical departments. Fellowships in dentistry and in hygiene and public health are arranged for in the same manner.

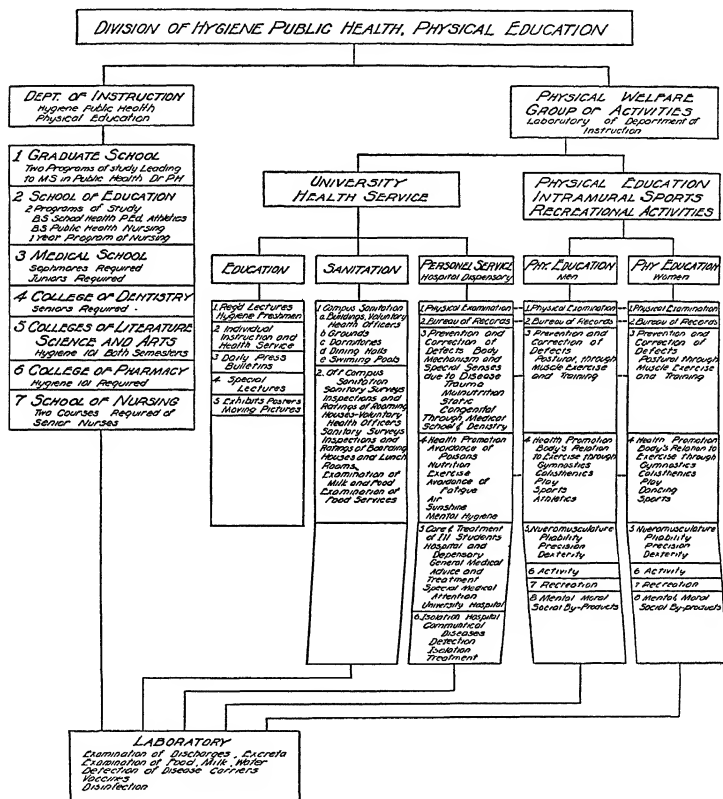
Naturally there are many students who, although they have paid the health fee, prefer, when ill, the services of their family physician or a local physician of their own choice. The facilities of the hospital and dispensary should be open to all reputable physicians. They should be made to feel that the health service is anxious to coöperate with them in providing the best treatment for the students. Physicians located in the college or university community frequently criticize or object to the establishment of a health service. Especially is this true in smaller communities. These physicians regard a health service as contract medical practice and feel that their practice will suffer as a consequence. Usually, however, students consult physicians only when they are in pain or in case of actual illness. Furthermore, the student-age group as a whole is relatively free from illness. Probably not more than 5 per cent of students would consult physicians during the school year if a student-health service were not maintained. In its program for positive health and physical efficiency the health service attempts to deal with 100 per cent of the students and to impress every student with the importance of intelligent attention to health, early attention to defects and minor illnesses, and preventive measures. It is a matter of education. Physicians in general will be consulted more rather than less as a result; and in time fewer quacks and pseudo-scientists will find college graduates among their supporters.

Close coöperation should be maintained between the student-health service and the municipal health agencies. This is especially desirable in the prevention and control of communicable diseases. In some college and university communities the director of the student-health service has been made a deputy city health officer, to the mutual benefit of the college and the community.

The student-health service is a comparatively recent educational measure, and many problems are yet to be worked out in most schools in connection with it and its relation to other agencies dealing with the physical welfare of students. It has already demonstrated its value in

the promotion of health and the prevention of disease among students while in college. Through the early correction and prevention of defects and potential physical handicaps, and through its emphasis on intelligent attention to health, it should make a real and far-reaching contribution to their health and physical efficiency for the years of service after graduation as well. To repeat, health is in many respects a problem of education.

A general outline of a scheme of organization follows :



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## CHAPTER XIX

### PHYSICAL EDUCATION AND ATHLETICS

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#### RELATION OF PHYSICAL EDUCATION AND ATHLETICS TO EDUCATION

Two decades ago physical education was not an integral part of the educational program of our American colleges. Up to that date it was given time in the school activities rather grudgingly. It was the best that education could offer, to meet the growing demand for some type of hygienic training.

The progress of physical education was suffering a two-way block. Educators were frowning upon a system which lacked a well-organized body of thought to support it. As a result the system lost step in educational progress. The men and women who were leading the cause of physical education had received their professional training in special physical-training normal schools, outside of the life and atmosphere of general education. Consequently they were partially ignorant of the general educational tendencies. They regarded their work as a detached problem which had to do only with the physical and muscular aspects of the student and not with the acquirement of mental, moral, and social benefits.

The earlier system was primarily structurally minded and thought only in terms of anatomy and muscular physique. The whole plan was lost in a single groove,—that of structural vigilance and care of the physical body, with no thought of functional relationship to education in general.

The main function of education is "to train the human mechanism toward efficiency as an instrument of self-expression, with reference to the various opportunities and responsibilities of life."<sup>1</sup> All agencies of education should aim at these common ends. This does not mean that extracurricular activities should contribute an amount comparable to that furnished by the curriculum; but they should be integers in the plan.

<sup>1</sup> Thomas Denison Wood (Editor). *Health and Education. National Society for the Study of Education. Yearbook, 1910, Part I*: 82.

One century of American pioneer work in physical education showed the place of motor activity in the school curriculum, and, despite the incompleteness of the plan, kept the idea alive until educators could present a program which was physiologically and psychologically sound and pedagogically acceptable. The new type of physical education maintains an organic relationship with the educational program. It stands foursquare as a neuromuscular program to aid education not only in rounding out the physical, mental, social, and ethical being in its care during the four years of college life, but in sending the student home with a lifetime recreation,— with a favorite sport which will insure for him activity and freedom in his maturity.<sup>2</sup>

#### CONTRIBUTION TO INTERNATIONAL RELATIONS

At a meeting of the National Education Association in Seattle, Washington, July, 1927, Augustus O. Thomas, President of the World Federation of the Education Association, who seemed to see in the development of the sporting blood of peoples the ultimate breaking down of national jealousies and racial hatreds, spoke as follows :

Sporting blood is the most common blood of the human race and should be utilized in bringing about international understandings and in relieving national jealousies and race hatreds. . . . We seldom have trouble with a good sportsman. It is a trait worth cultivating. The sporting element is closely allied to the social side of life. We need to cultivate each other in clearing away misunderstandings. Misunderstandings cause hatreds, and hatreds cause war. War, therefore, becomes an intellectual problem. . . . Our schools can do more than any other influence to break down the wall of prejudice. The sporting sense should be developed. It is the wooden horse by means of which we can break into the walled city of human hatreds. It will strip the mask of deceit from the face of racial and national jealousies.<sup>3</sup>

Educators are fast realizing the international importance of sports and games. Such persons as Helen Wills, Gertrude Ederle, William Tilden, Francis Hunter, Elizabeth Ryan, Sabin Carr, and Colonel Charles Lindbergh, have contributed much to the world-wide mission of sporting contacts for international betterment. Each has done his effective bit to establish better relations with other nations through his American spirit of adventure and play. Modern physical education founded on the primary basis of sports and games is the most effective program of its kind in our universities and colleges today.

<sup>2</sup> *Ibid.* Section on "Physical Education," pp. 75-104.

<sup>3</sup> Associated Press Reports, Seattle, Washington, Tuesday, July 5, 1927.

The late President Hyde of Bowdoin College once outlined the aims of the American Arts College as follows:

To be at home in all lands and ages, to count Nature a familiar acquaintance, and Art an intimate friend; to gain a standard for the appreciation of other men's work and the criticism of your own; to carry the keys of the world's library in your pocket, and feel its resources behind you in whatever task you undertake; to make hosts of friends among the men of your own age who are to be leaders in all walks of life; to lose yourself in generous enthusiasms and coöperate with others for common ends; to learn manners from students who are gentlemen, and form character under professors who are Christians, this is the offer of the college for the best four years of your life.<sup>4</sup>

### HISTORICAL BACKGROUND OF PHYSICAL EDUCATION

1. *Ancient Developments.* Human nature in its sporting instincts has not changed. Eight hundred years before the birth of Christ the celebrated Greek games impressed upon the states of Greece a common social, religious, and intellectual character. They promoted intercourse and trade; they strung every power of mind and body, in participants and nonparticipants alike, to the highest tension; they softened the manners of the people by turning their thoughts from martial exploits and giving them a respite from war.

Today education is turning to sports and play programs to achieve for us what they did for the Greeks twenty-eight hundred years ago. The voluntary motives back of our system of play differ materially from the religious sense of duty which prompted their games, but the ideal to be achieved is the same. We are looking to this sporting instinct, properly directed, to give us a better understanding of peoples, to break down hatreds and jealousies, and to bring about peace among nations by giving them a common character and an international point of view. These are age-old roads that we are traversing, with the experiences of centuries behind us.

The great stadia of the present age have been erected at the expense of millions of dollars and will seat from 20,000 to 100,000 spectators. The great stadium of the first century, A.D. 76, the Colosseum at Rome, seated 80,000 people. A nation's pride must not rest in the vast amounts of money expended or in the vast throngs assembled, but rather in the worth of the purpose back of it all. In the Greek games all the arts were fostered for the glory of the gods. Athletic feats, oratory, music, art, and poetry went hand in hand. The participants were

<sup>4</sup> Frederick J. Kelly. *The American Arts College*. The Macmillan Company, 1925.



the noblest types that the race could produce. It is significant to note that these games preceded the Golden Age.

Some four centuries later the Romans, differing widely from the beauty-loving, reflective, and cultured Greeks, established themselves on the banks of the Tiber with but one great thought in mind,— that of militarism and world conquest. They were a people accustomed to the thrills of the circus and the amphitheater. They supported a class of professional athletes, who were virtual slaves to their trainers, but as a people they had no desire for wholesome competition for the love of it. Their contests of men with beasts or of beasts with beasts marked a degraded type of civilization in the last stages of athletic professionalism, and, eventually, the fall of Rome. Inspired by no nobler purpose than that of sensuality, iron discipline, and world conquest, they had nothing left by which to hold on.

No sooner had the Teutonic tribes overrun Romanized Europe than they began to become converts of the young and vigorous Christian Church. Because of the accompanying doctrine of asceticism, for fourteen hundred years physical education had no history. The progress of Greek antiquity became lost in the Middle Ages. As long as the dualistic philosophy of the early Christian Era decreed that the body was evil and an enemy of the spirit, there was no opportunity for the growth of physical education or even for adequate care of the health. In the absence of any authorized outlet, youth of those ages found vent in drinking, gambling, brawls, and organized lawlessness.

With the revival of learning, different phases of physical culture came back. There was a renewed attempt to train new Greek and Roman citizens and to revive and reproduce the life of the past. In 1378 De Feltra, an Italian schoolmaster of the new era, introduced dancing, riding, fencing, swimming, wrestling, running, jumping, and archery into his school at Mantua.

Three centuries elapsed before any other attempts were made to carry on work in physical training. In 1774 Basedow opened the first school in Germany. His pupils carried on his work for fifty years in the open spaces under the oaks. No gymnasia were provided.

*Modern background.* In Sweden, in 1813, Per Ling, inspired by the movement in Germany, began a systematic development of Swedish gymnastics which has resulted in the most precise system of exercises and movements that the world has ever known. Ling contributed two new phases to the work, medical and pedagogical, and deserves his place as an outstanding pioneer.

While Ling was perfecting his Swedish system Frederick Jahn, the father of popular German gymnastics and founder of the order of the

German *Turnverein*, which played a colorful part in shaping our gymnastic policies, introduced a form of popular gymnastics in Germany. Behind his gymnastic achievement was a patriotic desire to rebuild the bodies of the young Germans in order that they might withstand the French.

In 1827 three university-trained German refugees, Beck, Follen, and Lieber, all followers of Jahn, and fleeing the reactionary policy adopted by the Holy Alliance, came to the United States and established the Jahn system of German gymnastics in the cities of Northampton, Cambridge, and Boston. These were the first college and city open-air gymnasia in America. These three men were educators as well as gymnasts, and gave physical education a worthy introduction in America. Beck was professor of Latin and permanent tutor in Harvard University. Follen was the first teacher of German at Harvard. Lieber, in addition to publishing the first *Encyclopædia Americana*, served as one of the founders of Girard College, and later as professor of history and political science at Columbia University.

Crushed in the revolution of 1848, other German refugees, of the order of the *Turnverein*, preferring to give up their fatherland rather than their ideals, came in thousands to the United States. Thus did Jahn's system of gymnastics continue to fasten itself upon the life and customs of America. The American *Turnerbund* is the transplanted German *Turnverein*, with its program of German gymnastics and its patriotic zeal transferred to an adopted land.

*Progress in America.* In the progress of physical education in America other distinctive influences arose. In 1861 Dio Lewis introduced free gymnastics performed to music, including dumb-bell and wand drills and some other forms of hand-apparatus work, for both men and women.

Baron Nils Posse came to America in 1885 for the purpose of demonstrating Ling's Swedish gymnastics. This he did with such fine success that in the next six years fifty-two towns and cities included the system in their regular school program. Two years later Dudley Sargent elaborated the system of developing appliances and contributed some forty different inventions, such as chest expanders and developers, quarter circles, and leg and finger machines, which by graded pulley weights gave measured resistance to localized muscular movements.

In 1889 occurred the first conference in America in the interests of physical education. William T. Harris, United States Commissioner of Education, presided over the four sessions, and nearly eight thousand persons attended. As the system of physical education continues to grow in significance this first conference becomes all the more notable.

From these early beginnings there has been steady growth in both aims and methods. About the middle of the nineteenth century there were four different systems of physical training on trial in the United States,—military drill, the Jahn gymnastics, the manual-labor movement, and calisthenics for girls and women. The set exercises which were the basis of these systems failed to arouse the enthusiasms of American youth or to satisfy the temperament and interest of an Anglo-Saxon people. Therefore the attention of physical educators swung to games, swimming, and folk and national dancing, which represented additional features and began to indicate a wide and confusing range of elements.

Today physical education holds its place in the college curriculum as an effective and valuable channel for the teaching of moral and ethical principles. The trend of the present age has been overwhelmingly toward competitive play. Athletics and games have become light-bearers to the physical-education program. They must be kept as a component part of physical education and college life.

#### OUR PRESENT SYSTEM OF PHYSICAL EDUCATION A COMBINATION OF THE GERMAN AND THE ENGLISH

The English systematized athletics while the Germans systematized learning and gymnastics. For the past hundred years America, more or less confused in the midst of these conflicts, has been trying to find out just what it is best to do. Out of the two systems has come a mixture of both.

The early English colonists brought us their Maypole dances, and others of their games and festivals, but with no thought of fastening them upon our life as a system. Their play life was so interlinked with their national character and self-expression that contentment without it was impossible.

The English idea of education was culture; therefore the life of the school was highly emphasized. The Englishman took time to immerse himself in school life and to give it a chance to soak in. English parents encouraged their sons to play and sent them to Eton or Harrow "quite as much to learn cricket or football as to learn Latin or Greek."<sup>5</sup> Every Englishman, first of all, must be a gentleman accomplished in at least one sport.

The German ideal was learning. An idle fellow found a German university a dreary place, for there was no life, other than study, within

<sup>5</sup> Henry S. Curtis. *Education through Play*, p. 88. The Macmillan Company, 1915.

its walls. The severity of the scholastic life forbade the development of school atmosphere, and the boy in search of school life only was apt to find nothing but debauchery. The German youth had no play tradition. There was no parental encouragement toward games and play. In their past were only war and hard work. Primarily the German was a duellist, a fighter with a disciplined mind. He was as proud of his scars received in duelling as an American or an Englishman would have been of a cross of distinction for bravery in a more worthy cause.

The Englishman came through his college career abounding in health; the German, often with shattered nerves. The Englishman took with him into life a memory of his college days akin to a memory "of Eden from which he had been driven by advancing years." The German took into life with him disciplined and scholarly methods and a mind schooled for gruelling toil, but very few pleasurable recollections. The Englishman learned what personal contacts meant in the lives of men. He learned the meaning of loyalty and team spirit. He went out of college ready for citizenship, statesmanship, and public service. The German was ready for deeper intellectual toil if his health would stand the test.

Germany finally found that she was misrouted, and learned from England how to play. Thirty-five years ago England, at the request of Germany, sent football and cricket teams to Germany to demonstrate these games. Seventeen years later twelve hundred and ninety-five German footballs teams and more than seven hundred cricket teams were playing in the various German cities. Desires, suppressed and stifled for centuries, began to find outlet.

Germany was greatly handicapped in the play movement by lack of playing space for sports and games. The German gymnasias (corresponding to the English public schools) were centrally located in the large cities, with no play space at all. The public schools of England were intentionally located in the country, where there was ample room for fields and playgrounds. The one nation had a conception of play; the other had its vision blighted by centuries of rigid discipline and war.

The World War contributed its share of advancement to the play program of Germany. Years have passed since the American army of occupation vacated German soil, but it left behind it something that it could not take away, — American enthusiasm for sports and games. In 1928 Germany assembled a larger Olympic group of competitive participants for the tryouts than any other country in the world. A war-weary world turned en masse to recreation through sports and games.

Our system of physical education must grow along English lines. Probably more than 90 per cent of the students in the English universities engage in football, cricket, rowing, tennis, or lacrosse every afternoon. At the same time one authority states that there is "more culture floating about in the air" in the English university "than there is in any other university."<sup>6</sup>

The Greeks were participators in their sports; the English are participators. The Romans were spectators only, and their brutal gladiatorial contests preceded their fall. America, hampered in two ways from building a system akin to the English system of play, has been forced too long into the rôle of spectator only. First, because of hard years of pioneering, America has lacked time to play. America had no leisured class to lead the nation into habits of play. Second, our system of physical education, established under the vision of German masters, suffered the handicap of inadequate playing space for sports and games. Thus we learned to sit and not to play.

#### CAUSES FOR THE SLOW GROWTH OF GYMNASTICS

In the German universities formal gymnastics were judged a conspicuous success. In our American schools they have been an evident failure. In the eighteenth century GutsMuths defined gymnastics as a system of exercises having as their aim bodily perfection. To the German educator, bodily perfection was an end in itself. To the American educator, developing the body for its own sake and independently of its true relation to mind and personality was not a purpose worthy enough to make it wholly acceptable to educational theories.

Inglis says that "formal gymnastics as the principal means of physical training readily allow the subordination of educational needs to administrative exigencies."<sup>7</sup> He classifies the faults of the system of gymnastics so clearly that there is small need to bring them forward in a different way:

1. Formal gymnastics are highly artificial and do not correspond closely to the normal motor activities of life.
2. They are purely mechanical and lack mental content.
3. They frequently arouse a distaste rather than a liking for physical exercise.
4. Except for a few individuals they fail to arouse permanent interests or to develop self-sustaining habits.
5. They ignore or minimize the recreation element.

<sup>6</sup> Henry S. Curtis. *Education through Play*, p. 111. The Macmillan Company, 1915.

<sup>7</sup> Alexander Inglis. *Principles of Secondary Education*, p. 656. Houghton Mifflin Company, 1918.

6. They lack the social and moral elements which are prominent in athletics and games.

7. As commonly taught to large groups they tend to ignore the individual differences in physical endowments, acquirements, and needs.<sup>8</sup>

Formal gymnastics are mental concentration. Athletics and play are mental recreation. Formal gymnastics engage the muscles passively. Athletics and play engage the fundamental groups of muscles actively. Therefore the physiological theory of athletics and play is sound.

The Swedish system of gymnastics, with its day's order of progression, alleviated some of the faults of the formal German plan. By the introduction of free play, as well as by the introduction of medical gymnastics, the Swedish system contributed to the advancement of physical education. The purposes behind a typical Swedish gymnastic lesson are (1) attention and orderliness, (2) discipline, (3) correction and adjustment of physical defects, (4) inspiration and recreation through the introduction of free play, (5) social contacts through free play, (6) fatigue, (7) shower bath, (8) relaxation. It is more than probable that without the introduction of corrective gymnastics and free play into the formal gymnastic program collegiate gymnastics would have ceased to be, for even Swedish gymnastics in their formal phases are somewhat deadening and exhausting. The free-play movement went hand in hand with our ever-increasing play program of today.

Formal gymnastics take away the initiative and force the participant to pay close and constant attention for no purpose except to execute conventional movements that have no connection with the mental or physical problems of life. The control in such a program lies in inhibition and self-repression, and is directly opposed to the true educational conceptions, which are seeking to train the student in ways of self-expression so that he may take his place in his community as a person of self-directed power.

The many fancy "stunts" and tricks in the skill of which the enthusiastic gymnast once drilled his students, because they were showy, are passing. It is considered permissible, however, where there is evidence of marked skill, to develop this type of physical training along competitive lines, such as the competing of gymnastic teams against each other. Many of the free-hand exercises of the mechanically rigid and awkward type have given place to the more useful and natural bodily movements.

<sup>8</sup> Alexander Inglis. *Principles of Secondary Education*, p. 653. Houghton Mifflin Company, 1918.

Someone has aptly compared formal gymnastics in physical education to drugs in medicine. Physicians are getting away from drugs. In a similar way the natural movement in modern physical education is away from all invented artificialities of movement.

#### THE OVERSHADOWING IMPORTANCE OF COLLEGE ATHLETICS

In the progress of education our theories of play have changed materially. The Schiller-Spencer theories of play as a result of surplus energy have passed through many stages of revision. Groos and Froebel contributed their theories, which showed genuine advancement. Had Froebel carried out for youth from the ages of six to twenty-one the same successful program of plays that he carried out for the child during the kindergarten period, many of the difficulties which have confronted educators since might have been cleared away.

Sully, Preyer, Hall, Gulick, and many others of the modern field have emphasized particularly the relation of the biological and physiological aspects of child development to the mental. They have found in the play of the present the motor habits and spirit of the past persisting for expression. They have found what psychology deems the correct relation of play to the instincts. They have taught us to believe that the child learns more by what he experiences through his neuromuscular activities than through what he perceives directly with his five senses.

The achievements of Helen Keller have shown that action is necessary for the complete consciousness of sensation. The avenues of motor activity were all that were left open to her. Classroom impressions through the medium of eyes and ears are not enough. Ideas, emotions, or feelings, worthy of expression, must be actually experienced and expressed by contacts, by laboratory findings on athletic fields through some definite objective, such as out-running a competitor or out-tackling an opponent. If motor sensation is essential to effective educational methods, colleges and universities must provide in their educational programs the most valuable form of motor activity which is not otherwise supplied for the students in the curriculum or in the life outside.

Gymnastics are mechanical contrivances; athletic teams are living, pulsating organisms. Sports and athletics generally have opened up a long-closed channel of naturalness and self-expression. Hall has aptly called play motor poetry. Educators everywhere are becoming convinced that play furnishes an adequate physical training for the normal student. No more do we question the assertion that play

educates. Athletics and games, to a degree unparalleled by any other school activity, tend to unify education,— its physical, moral, mental, and social character. American college athletic fields have become laboratories for problems in ethics. The element of team play in athletics has increased our entire "spiritual revenue."

Joseph Lee says that "the first commandment of the gang spirit as the code of manliness in all ages is 'Thou shalt play the game!'" Further, that "the plasticity and passion to make good are not brought together in growing youth for nothing. Their conjunction will last but a few years, and now or never is the time to precipitate the achieving instincts upon the particular form of utterance that is most open to them in the existing world."<sup>9</sup> The conviction back of the modern spirit of play is that the play experiences encountered by plastic and passionate youth on the athletic fields will serve as an apprenticeship to all future endeavor. The strenuous aspect of athletics, with each man creating his own mental and physical action, tests and develops character.

Education, through the avenues of wholesome athletics and competitive play, should send its men and women out into their chosen pursuits with a zest and an eagerness akin to that which they had for their college games. If there is not this transference of training, scientists must return to their laboratories, for their theory of the natural and creative value of play over gymnastics will have failed. Exactly what this play is that has overshadowed gymnastics we shall not know until we know exactly what evolution is.

#### HEALTH ACTIVITIES IN PHYSICAL EDUCATION<sup>10</sup>

A report (July, 1917) of the Committee on Athletics to the Commission on Higher Education of the North Central Association, in commenting on the situation in athletics at that time, says:

Real progress in the present athletic situation will be achieved only by changing the situation. Such a change in the right direction may be the adoption of the health interests of students as the point from which to view the athletic program and the complete incorporation of that program in the general educational program of the college.

Adequate facilities for such an approach to the intercollegiate athletic program at the present time are unavailable. Such action would require great extension of personnel and physical equipment in order

<sup>9</sup> Joseph Lee. *Play in Education*, pp. 460-461. The Macmillan Company, 1915.

<sup>10</sup> See chapter on "Student Health," p. 526.



to provide health service for each student and opportunity for real progress. Any program of physical training should presuppose proper supervision and care of the students' health. In the words of the late President Eliot, "If labor is pressed beyond the limits of strength and health, content in it is impossible. Any overwork destroys the physical basis of satisfaction and toil."<sup>11</sup>

The present plan of the blended health and play programs under the department of physical education and athletics is inadequate. In addition to the department of physical education and athletics there should be a separate department of hygiene and health service, closely correlated with the department of physical education and functioning directly under the supervision of the school of medicine, or, in the absence of a school of medicine, under the executive governing power of the university. Physical education must always be hygienic in the highest degree, and physiologic values must always be obtained; but by the very nature and stress of modern athletics, with the increasing demands upon the time of coaches, directors, and instructors, it is only fair to the better interests of the student to reduce the load.

This change in the program would not mean a lessening of the health service rendered by the physical-education department; it would mean additional service rendered by the hygiene and health-service department. By means of thorough medical and physical examinations of each student the hygiene and health-service department would send the student to the physical-education department with complete information about his own health problems. With this information as a working basis the physical-education department would prescribe exercises to fit each individual need. Each student would be assigned, accordingly, to corrective or clinical gymnastics or to athletic games,—always on the basis of an ascending scale, even to the varsity teams.

With such a plan of examination enforced, the health examiners, in their independent and separate department, would be in position to protect students from overzealous coaches. Health and future usefulness should take precedence over athletic victories. This plan would give the students the benefit of the opinions of specialists in the various medical fields. The chief concern of such an examining board would be student health. Through a general improvement of health greater resistance to disease would be built up, and many more students than formerly would be protected from failing health. It is economic loss to train the mind and neglect the body.

<sup>11</sup> Charles W. Eliot. Content in Work. *World's Work*, 8: 4959-4962, July, 1904.

## INDIVIDUAL NEEDS

Future needs will demand that physical instructors be physiologists and anatomists as well as teachers. It will be imperative that they know the structure of the human body, the origin, the insertion, and the action of muscles, and the nerve and blood supply. The successful

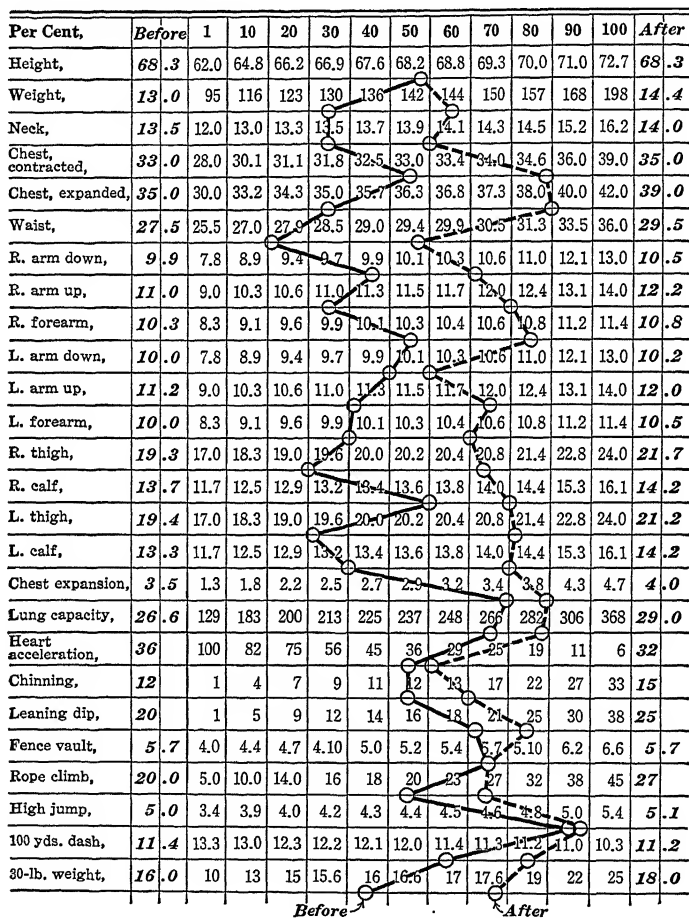


FIG. 1. Percentile and proficiency chart shows an actual case of a junior in college, age twenty-one, after two years of corrective physical competition with himself. The straighter the line joining the points, the more nearly he approaches the symmetrical. The nearer the line approaches the 1 per cent the poorer he is in that measurement, while the nearer he approaches the 100 per cent the better is his development

specialist in corrective gymnastics must approach his work with his clinical student earnestly and thoughtfully. He must first determine the strong points in the student's health chart, and thus arouse enthusiasm and interest. He should make all clinical exercises competitive in spirit by encouraging the student to compete with himself for his own improvement. He must then determine the weak points in the student's health chart, so that he may be able to aid in the correction of the most pronounced defects without letting his clinical student know what might bring him complete discouragement. By frequent examinations the real progress can be determined. By the use of a percentile and proficiency chart (Fig. 1) the student will be able to determine his progress toward the curves of a symmetrical being.

### COÖRDINATION OF PHYSICAL AND HEALTH DEPARTMENTS

Following are two brief outlines indicating the correlated health service for students—one to be rendered by the hygiene and health department, and the other by the physical-education department.

#### HYGIENE AND HEALTH DEPARTMENT

1. Thorough medical and physical examination to every student one week before matriculation, these examinations to preclude the enrollment of students who are suffering from systemic, social, or contagious diseases.

2. Teaching of courses in hygiene, comparative anatomy, human anatomy, physiology, etc., these courses to be given full credit in the four-year course for teacher training toward a B. S. degree in physical education.

#### PHYSICAL-EDUCATION DEPARTMENT

1. Prescription of exercise by a specialist in medical gymnastics:

- a. Before engaging in any other physical activities, students must pass a swimming test of 100 feet.

- b. Corrective or clinical gymnastics, with some touch of play to stimulate the interest of handicapped students.

- c. Supervision of percentile charts and proficiency tests.

- d. Intramurals.

- e. Competitive athletics.

2. Required physical exercise for all freshmen, three hours a week; for all sophomores, two hours a week. This requirement should be extended to include juniors and seniors if facilities are available.

3. Noncredit lectures once a week on personal and general hygiene by various members of the physical-education department.

4. Research work within the department on many problems of vital interest to physical education, a few of which are suggested:

- a. Effects of the various group games upon the vital organs of participants.

- b. Effect of competitive athletics on girls and women.

c. Effect of the psychic upon the physical, as evidenced by the fact that the same man may play a brilliant game one night and an inferior game another night, when physical tests show that the player is in perfect physical condition for both games.

d. Administration of physical education and athletics in small colleges.

e. Special service within the state, such as comparison of state syllabi of physical education etc.

This is an age of facts instead of opinions. Every department, so far as is feasible, should foster and encourage research within its own field, especially among the colleges of its own state. The state universities should act in the capacity of clearing houses of information for the smaller colleges.

### FIELD STUDIES

The type of research service which a department of physical education should render within itself can be indicated by some of the investigations recently carried on by Dr. James Naismith of the University of Kansas. For instance, in the last several years an opinion has arisen that basketball and football are entirely too strenuous for the participants. Dr. Naismith took, as his working basis for discovering the facts, two situations: (1) High-school boys competing for the state championship in a tournament held at the university; (2) two teams of university players in a varsity football game.

In the first case, every boy competing in the tournament came under a vital test, including a careful urinalysis, after each game. The urinalyses were made by the biochemistry department of the medical school. Sixteen teams were entered in the tournament and came under the same examinations. After the fourth and championship game the tests showed that the members of the Wichita High School team, the winner of the state tournament, and later winner of the National Championship at Chicago, were in better physical condition than at any time during the tournament. Of the members of the two teams that played for the championship but one man showed any traces of albumin and casts. This investigation refuted previous opinions that basket ball was too severe on the hearts and the kidneys of normal high-school boys. Basket ball seems strenuous to the spectator because the spectator naturally follows the ball, which is the focus of activity.

Some years ago, however, Dr. J. H. McCurdy of the International Y.M.C.A. Training School at Springfield, Massachusetts, conducted a similar test upon team members at that college and found that 87 per cent of the players showed traces of either albumin, blood, or

casts in the urine. Perhaps the difference in the results of the two tests was due to the differences in the ages of the two groups of players. At the Y.M.C.A. Training School the players were older men — college students for the most part — who had already served their years of interscholastic and collegiate competition. The wear and tear on the older physical machines was too severe.

The second interesting test was made on four high-school teams entered in a league tournament, to ascertain the actual number of minutes that the average high-school basket ball player was in motion during an entire game. A separate watch was kept on each of the twenty men in the games. Whenever a player stopped, the watch was stopped, and count was resumed again when the player resumed activity. The results of the investigation were as follows :

1. Average time elapsed for one ten-minute period of play — 13 minutes 8 seconds.
2. Shortest time of activity for any one player — 3 minutes 32 seconds.
3. Longest time of activity for any one player — 7 minutes 21 seconds.
4. Average time of activity for each player — 5 minutes 28 seconds.
5. Percentage of average activity of each player to the entire playing time — 39.6 per cent.

The third test was made upon two varsity football teams while they were in competition, in order to determine the actual playing time of the average university football player. The two teams in action were from the University of Nebraska and the University of Kansas. The total time which elapsed between the first and last whistles was two hours and fifty-six minutes. The actual time that the game was in progress was sixty minutes; yet the longest total playing time of any player in the game was twelve minutes and thirty-four seconds.

These findings are used to illustrate the field for health service that is awaiting willing and competent men and women in the field of physical education. Some forty years ago Dr. Hartwell of Johns Hopkins University conducted the first research in the field of physical education. Working under the direction of Commissioner Eaton of the United States Bureau of Education, he visited colleges from Maine to Tennessee, and his survey raised physical education to a place of dignity and worth in our American school system. We do not walk blindly into our problems of today. We await the findings of research committees. At the present time the North Central Association has received the findings of Dr. H. J. Savage of the Carnegie Foundation to determine the scholarship standing of athletes, and will shape its future athletic policies accordingly. Through the Carnegie and the Russell Sage foundations, the United States Public Health

Service, the various bureaus of educational research in the universities, and the welfare divisions of the large life-insurance companies we are the beneficiaries of invaluable investigations which are being prepared each year.

#### ATHLETICS FOR WOMEN

Throughout the years education for American women has suffered its limitations. Among these limitations none have been more conspicuous than those of athletics. Slowly but surely we are coming to realize that we have been denying women the right to fundamental character-training through the group associations of team games. Because we took for granted certain psychological differences of sex which do not exist, we have systematically neglected the mental, moral, social, and æsthetic training of American women through the avenues of play for play's sake.

The president of one of the Pittsburgh Vacation Schools, commenting upon this subject, once said :

Without far more wisdom than we have hitherto shown in the education of our women their moral natures will remain undeveloped, and unequal to the fearful strain of temptations to which they are subjected.<sup>12</sup>

Too much stress has been put upon the idea that sex presented insurmountable difficulties, because of differences of temperament, capacity, and mental activities, when in fact the chief differences in the sexes are the differences of the social training of boys and girls throughout their years of childhood, adolescence, and maturity. We now believe that the likenesses between the sexes are greater than their differences, and that future citizenry will call for men and women who will share equally and frankly its responsibilities and its satisfactions. The newer physical education for women will not make them more masculine; it will exhibit in comparison a feminism with as fine qualities of sportsmanship and citizenship as any that men enjoy.

A recent trip through rural English Canada did much to convince the writer that the foregoing conclusions are true. Just before sunset one can see, in village and hamlet, girls' baseball or kitten-ball team in competition, with enthusiastic audiences supporting them in their play. This is organized play, and practically every village supports its girls' team. Three or four of the villages organize into a league and play for a championship. The teams play with indoor baseballs and thus avoid chances of injury. No admissions are charged for these

<sup>12</sup> Gertrude Dudley and Frances A. Kellor. *Athletic Games in the Education of Women*, p. 19 (Report on Pittsburgh Vacation Schools). Henry Holt and Company, 1909.

games, but a contribution plate is passed to help to defray the expenses of the visiting team. The players are skillful and show rare generalship in playing their positions. They are cool, deliberate, and businesslike, but evince no desire to be masculine instead of feminine. They portray the types of the new women, possessed of team loyalty and splendid sportsmanship but with no evident sacrifice of womanly grace and dignity.

Formal gymnastics as a primary basis for physical education for women, as for men, have had their day. Dancing, in its various interpretive forms, has a wealth of material which is valuable for giving symmetrical muscular development, teaching poise, and forming habits of graceful coördinations. The dramatic type of dancing, the Greek, the Roman, the folk dances of every land, and the American negro dances, such as the clog, the shuffle, the buck and wing, and the Charleston, with their associated influences of music, contribute, largely through the pleasurable features of exercises, certain definite physiologic and hygienic values. But dancing offers nothing for character building. The development of poise and body control is not enough. Through its interpretations dancing stimulates the emotions, but to no purpose as far as character enrichments are concerned. The stimulation of such emotions as joy, sorrow, sympathy, pity, and the like is worse than lost if it does not open up a field of reliable conduct. The overstimulation of an emotion to no purpose leads to passivity and shallowness, and becomes a source of character destruction rather than of character building.

#### EDUCATIONAL AND HEALTH VALUES

The placing of equal emphasis upon educational and health values has been the cause of increased interest in competitive play for women. Playing for health and recreation is commendable, but playing with the will to win is better. We do not live at our best and live aimlessly. Neither do we play at our best unless we have a definite goal. That fighting urge to win, which comes through stimulated emotions and intellect, and which our young men find in competitive intercollegiate athletics, is gradually finding its way into the hearts of college women. It will prove a powerful agency in keying the woman's will to habits of training, obedience to orders, and discipline of body. Heretofore college women have missed the boy spirit of training for fitter bodies and discipline for better sportsmanship.

Intramurals, embracing such games as baseball, cricket, hockey, shinny, tennis, and basket ball, are opening up a new play life for

American women, and they represent an important step in the naturalized movement of the new physical education. College women must have their chance to be organized into strong competitive teams and must be supported by an enthusiastic following, else our physical-education program will not operate at capacity efficiency. If women can be artful enough to make their athletic contests interesting and beneficial to themselves, they will find an enthusiastic audience waiting with approval to receive their competitive games.

Not long since, a fellow faculty member called the writer into her office to say that one of our athletes had been caught cribbing. The writer deplored the fact that an athlete would stoop to this low grade of sportsmanship. She said in reply :

Oh, but this is the only time that an athlete has been caught cheating in this class. A great many more girls cheat than do boys. . . . You athletic people have been hiring coaches for men for twenty years. You teach them sportsmanship through play. It is unfair for them to trip or foul the other fellow when the referee's back is turned. With such a background to aid me I can leave the room when a "quiz" is in progress with the admonition that my students be good sportsmen, and the boys know what that means. But the girls do not. . . . Girls like to compete in play as well as do boys, but the educational system has overlooked this fact, and you have made no adequate provisions for facilities and instruction for them.

The general tendency in physical education for women has been away from group games for adolescent girls. Adolescence is the very period of the girl's life in which group consciousness can best be stimulated or lost, as conditions may warrant. Elizabeth Kemper Adams, Educational Secretary of the Girl Scouts, says :

Most seriously of all do we need to reflect upon the enormous scale on which the energies of girls are exploited today, and the extent to which they are being consumed by thrills instead of being developed through valid experiences. . . . To lead girls to think that they can manipulate life through the passive artificialities of personal appearance is to exploit a natural interest in the cruelest way.<sup>13</sup>

Such women as Gertrude Ederle and Helen Wills have demonstrated the ability of American women to rival men in athletic achievement when the proper avenues are opened to them. Immediately after her achievement of success in swimming the English Channel, the *New York Times* had this to say of Gertrude Ederle :

In keeping with the character of the age, Gertrude Ederle proved herself more than the peer of the five men who had swum the channel in fifty years, for she had cut the record to 14 hours and 31 minutes.<sup>14</sup>

<sup>13</sup> Lillian Schoedler. *Recreation Life for Girls. Playground*, 18: 635-638, February, 1925.

<sup>14</sup> Sunday, August 8, 1925.



Haig Patigian, sculptor, in his studio in San Francisco, is completing a bust of Helen Wills called "Helen of California." A Western magazine, commenting on this work, says:

There is a new type of beauty abroad in the earth. Her beauty is something more than candy-box prettiness, for it rises from within. Her intellectual life, her physical ruggedness, and her artistic gift each have their share. There is something that shines out of the Helen Wills bust that is spiritual in character, — something not accounted for by the regular features, the shapely throat, the level brow. I began to study, to find a name for the thing that struck me as it has struck the art world of half a dozen nations. And the word I found for it is "poise."<sup>15</sup>

Patigian has reproduced in sculpture the thing that we hope for American women, — a type of physical ruggedness with an intellect alert and yet at ease. The end to be obtained for women in athletics is not the win-or-die spirit which predominates competition for men, but the exhilaration and delight of playing, — a naturalness of expression instead of artificiality, the development of a group consciousness with its many types of graciousness and power, a loyalty and a sense of honor that will make college women stand together, brave in defeat and modest in victory. For, indeed, there will be need of bravery in their struggles in the domestic, social, industrial, and political fields that await them.

Heretofore physical training for women has been passive and formal. The social side of play has been neglected. The new plan of physical education, with its naturalized forms which aim to bring into use the natural activities of brain and muscle, seeks to provide greater opportunities for individual and group expression and for the development of individual and group courage. The team games, such as indoor baseball, kitten ball, armory ball, basket ball, hockey, tennis, and relay swimming as major sports for women, and long ball, captain ball, push ball, volley ball, and drive ball as minor sports, will serve to release the tension of formality and will substitute a program full of meaning and significance. Each game, by giving each woman an opportunity to bring desirable instinct mechanisms into use, will be a medium by which a more complete social life may be developed. A well-planned program of athletics for women will stress the value of coöperation, will create a spirit of fair play, will obliterate pettinesses and ungenerous judgments, spites, and small vices, will develop presence of mind, will teach coolness under pressure, will facilitate quickness of decision and true judgments, and, in all, will create a passion for a larger life.

<sup>15</sup> William A. Brewer. Helen of California. *Sunset*, 59: 19, July, 1927.

## A DEPARTMENT OF PHYSICAL EDUCATION AND ATHLETICS

Following is a proposed plan for the organization of a division of physical education and intercollegiate athletics for colleges and universities. With the exception of the addition of the joint department of hygiene and health, this is the type of organization which is functioning in many of our larger universities at the present time.

1. The administration of the work in physical training, intramural sports, and intercollegiate athletics is under one central authority, the Director of Physical Education and Athletics. This arrangement interlocks the interests of the three divisions and effectively unifies the administration of the whole program. The director is responsible to the president of the university.

In many institutions athletics and gymnastics form two separate divisions. Such an arrangement leads to friction and defeats the very aim of the program. When the two departments are consolidated, the physical-training department is enabled to draw on the financial resources of the athletic department for aid in promoting a larger and more useful program. In many states the legislators have not been trained to the needs of physical education. Appropriations from this source have been wholly inadequate to carry on a dignified and sufficient program independently of other support.

2. To insure the greatest measure of efficiency there should be an athletic board or council, composed of (1) the president of the institution; (2) six faculty members, each being a representative of a different school within the university; (3) five students who are elected by the student body,—three athletic and two nonathletic members; and (4) the director of athletics. Athletic members of this board are members who have won a varsity letter in some sport, or at least student members who have had varsity competition. This method of selecting the student members by popular vote enables the entire student body to have a voice in athletic affairs.

3. Inasmuch as the athletic and play program is planned for the betterment of the student life, it is advisable to keep the control of the program on the campus. Some of the major evils that have crept into competitive athletics have come from overzealous alumni who have lost sight of the true purpose of the university and have retained only the sport-page interest. It is well known, however, that there are thousands of university and college alumni of unquestioned loyalty, ability, and foresight who have kept in close touch with the real progress and ideals of their alma maters and upon whom administrators must depend, from time to time, for counsel and support.

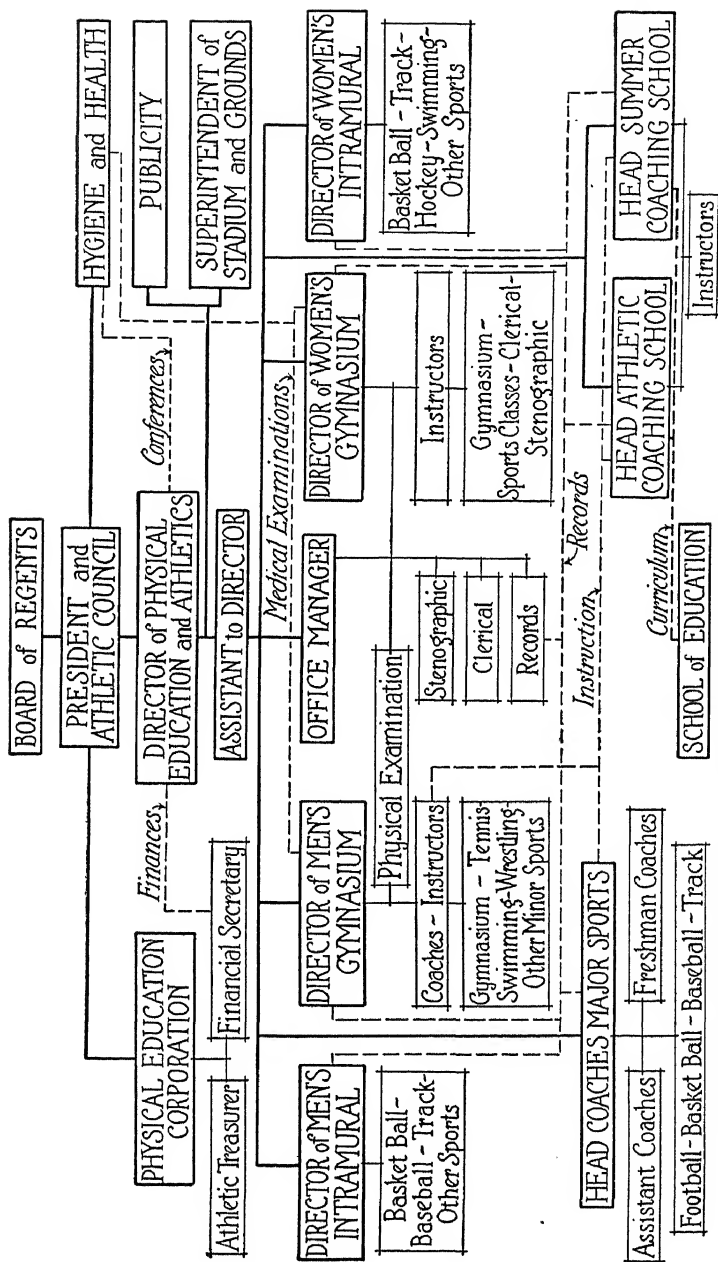


FIG. 2. Proposed organization chart for a division of physical education and intercollegiate athletics

4. Each departmental head is directly responsible to the director of the division of physical education. All coaches must serve full time and have the ranking of faculty members, with salaries commensurate with other salaries of officers of equal rank and paid by the institution. Unprejudiced judgment should take into account, however, the hazardous occupation of coaches in the competitive branches of sports. If the average coach has two successive losing years, his position is endangered, while in two successive years of winning he has contributed materially to increasing the gate receipts. Insurance companies recognize the fact that insurance rates must be higher for men who are engaged in the more hazardous types of occupation, but school authorities are slower to recognize the same principle of business.

5. It is to be understood that this proposed plan is elastic and that there is nothing to prohibit one instructor from performing the duties of more than one position. This plan of organization readily adapts itself to departmental growth.

6. The instructor in intramurals makes all schedules for this type of competition. He is then directly responsible for acquiring grounds and courts on which to play. Under this system of intramurals, fraternities, academic classes, boarding clubs, and every group in the university should be represented.

There should be no scholarship requirements for competition in intramurals except that the student be regularly enrolled in the university. No one should be barred from participation in intramurals except varsity letter men and squad men from the sports in which they excel. If a student from another university of equal ranking has made a varsity letter, he should be ineligible to compete in the sport in which he has won the letter.

7. The successfully administered program must offer opportunities and facilities for every student to indulge in supervised play, outdoors when possible, and some means of acquiring equipment necessary for such play, at the lowest possible cost. Recent surveys among American colleges have disclosed the fact that even in the best-equipped departments of physical education not more than one-half of the student bodies are engaging in recreative play. It seems to be the unrealized dream of every institution, however, to have all students playing their favorite games.

Much criticism is being directed at the vast amount of money that is being expended by colleges and universities in the present national stadium and field-house boom. It is the belief of many educators that we are riding swiftly to our fall, — that we may well look to Rome and read our fate. Such a huge building program in things athletic has

been suddenly thrust upon them that many perspectives are out of focus. They fail to consider the impetus given to the play element in education by the return of the expeditionary forces after the World War. In the army every American soldier learned to play a game. When the war ended, many of these men filtered back into their college halls with an increased interest in play. With this new situation before them, educators faced a new building program. Drab, unsafe, wooden athletic plants that had served their usefulness before the war gave way to permanent plants of stone and concrete.

When the turnstiles click for the huge crowds at the football games there arises a cry of commercialism. But the earnings from the athletic gate receipts are being used to liquidate the indebtednesses against these new athletic plants. Most of them are heavily mortgaged and will be for years to come. Therefore the ideal of every student playing his favorite game will move too slowly to its goal unless a plan can be devised whereby facilities and equipment can be furnished to the students. In a subsequent division, "Constructive Suggestions," a plan is outlined which may, in a short time, offer a solution to this problem.

8. In the next quarter of a century there will be an exceptional demand for professionally trained instructors and directors of physical education. These men and women will receive salaries commensurate with their character and training, unparalleled in any other field of endeavor. Heretofore the demand in this field has far exceeded the supply, and the schools offering this type of training have been so few that in many cases the training for teachers of physical education has been inadequate.

Many of the leading universities are now offering semiprofessional courses along physical-educational lines, namely, four-year coaching courses leading to the degree of Bachelor of Science in Physical Education. The universities of Illinois, Wisconsin, Michigan, Iowa, Kansas, and Nebraska are among the state universities of the Middle West which are offering such courses for coaches and teachers of physical education.

9. A publicity program in a modern athletic scheme is of vital importance. It is necessary to form intelligent public opinion both within and without the school. A workable method of bringing this condition about within the school is to enlist the entire school, both faculty and students, in the responsibility of supervising athletics. When faculty members come to realize that the athletic program is a part of them instead of a detached activity, many of the present difficulties will be obliterated.

In order to give correct information to an eager public, many of the

larger departments are engaging the services of full-time publicity men. The duties of such offices are to give out daily, authentic information to the newspaper correspondents whose journals cover the territory in which the school is located, to contribute timely articles on physical education and athletic news to monthly alumni magazines, publicity articles, photographs, and stereotype matrices to the scheduled conference schools for their publications, and bimonthly or monthly bulletins to all letter men of the university. In addition to such services the publicity department should supervise the printing of all athletic programs (including relays and track meets, and tournaments) and of all magazines or bulletins on organization and administration printed by the department of physical education.

10. In consideration of the legitimate activities of an athletic program it is highly advisable to keep athletic funds separate from state appropriations in a state school. In this proposed plan the athletic board of control directs the handling and the use of all athletic gate receipts. A non-profit-sharing corporation, composed of the entire personnel of the athletic board and at least six of the outstanding alumni who have become captains of industry in the outside world, is formed for promotional purposes, that is, to direct the income from athletic activities into useful building channels and into the acquisition of additional grounds for enlarged play facilities.

The athletic funds are handled directly by the financial secretary of the athletic department. He must be a man with competent business training and preferably with banking experience. He is directly responsible for the collecting, checking, and depositing of all funds with the athletic treasurer, who is the bursar, or business manager, of the university.

The financial books of the department are set up by a certified public accountant, who audits them annually and makes a report to the directors of the corporation. Likewise the receipts of every football game are audited by this same certified public accountant. The receipts from the minor sports are audited by a faculty member from the school of business, and at the end of the fiscal year his report is submitted to the certified public accountant for final approval.

The director of athletics, the athletic treasurer, and the financial secretary should be under sizable bonds. This method of handling finances will create an atmosphere of confidence and trust in the integrity of the organization.

11. Twenty-five years ago a lawn-mower, a horse, and a man were all that were needed for the upkeep of an athletic field. Today, with millions of dollars invested in single plants, the situation has changed.

Physical-education and athletic departments are keepers in trust of funds derived from memorial drives which were started by loyal alumni for the purpose of building new athletic plants. These initial drives served as the impetus for the larger building programs. These donors return to their respective schools year after year and expect to find their athletic plants in order.

These facts, together with the national emphasis upon outdoor play and the enlargement of the intramural program, necessitate the creation of the position of Superintendent of Stadium and Grounds. It is economy to have a technically trained man to supervise the many phases of this work. The care of the various competitive varsity and intramural athletic fields, such as baseball, football, track, tennis, hockey, handball, quoits, and armory ball, together with preparations necessary for handling huge crowds at the football games, demand the full time of a superintendent and many assistants.

12. The maintenance of free training tables, scouting, and the hiring of athletes should find no place in any part of the life of physical education and athletics. Final decision in all matters of athletic policy should rest with the faculty. Faculties should control and keep within reasonable limits the amount of time devoted to athletics, the strictest eligibility standards for competition, the assignment of special scholarships, and all forms of remunerative employment for athletes. College faculties should perform these duties without discrimination either for or against the athletes.

#### PROBLEMS OF ATHLETIC ADMINISTRATION

Athletics in the American colleges are paradoxical. They are the most severely criticized activity of college life, and they are the most loved. They are the most rational channel into which to direct the energies of youth, and they are, when improperly administered, the most dangerous and diseased. They are the most vulnerable activity of the American college life, and they are one of the most vital. Perhaps it is because we love them that we illtreat and punish them. The inherent Anglo-Saxon love of conquest and combat in the sports and games endangers the very object of its love. College students view athletics as an end in themselves. College professors steeped in habits of mind-training and hard work see them largely as misspent effort. Herein are the two extremes in overvaluation,— youth in an overvaluation of athletics, and middle age in an overvaluation of academic training. These two extremes are still far apart. The problem of the modern administrator is to find a middle ground.

One phase of competitive athletics, — football, — grown gigantic and powerful, is, in spite of its supervitality, now facing possible extermination.

[The] droll little pet which appeared almost simultaneously in the campus life of several of our great Eastern universities about fifty years ago, to all appearances an awkward, comical, clumsy-footed, innocent-looking, drab little pachyderm, has with passing seasons grown into a white elephant of prodigious size, untrained and almost beyond restraint, a mighty beast of the jungle with portentous potentialities for good or for evil.

What shall we do with our white elephant? Can we train him and use him or is he going mad on our hands before we can make him tractable? . . . A well-trained working elephant is one of man's most useful servants, able to perform great tasks with ridiculous ease; but a huge tusker on a rampage is an instrument of death and destruction.<sup>16</sup>

This is the athletic problem that is now facing educators. Football commands a devotion unequaled in any other sport, and it seems safe to predict that educators will find a way to train and control so valuable a beast of burden. Health and happiness, the building of good citizenry and the strengthening of community morale through the influence of our colleges, swing in the balance. The situation rightly controlled will satisfy one of the most basic demands of the educational program.

It is to be hoped that the dangers confronting the life of athletics are being somewhat overemphasized, and that, through vigorous action on the part of athletic conferences and splendid vision on the part of the leaders in the field of education, safe remedies, if not cures, for the evils will be found. Constructive, forceful, sympathetic leadership is what the cause of football needs to keep it alive.

#### EVILS ACCREDITED TO ATHLETICS

Among the many evils accredited to college athletics, especially football, are the following:

1. Football interferes to an unwarranted degree with the attainment of the purposes of the American college. It causes excitement which continues through the entire football season. This overexcitement manifests itself in undue neglect of academic work, pep sessions, migrations, and celebrations.

2. Athletics, football in particular, glorifies publicity and financial display, neither of which are worthy lessons for youth to learn.

<sup>16</sup> C. W. Savage. An Experiment in the Faculty Direction of Intercollegiate Athletics and its Obvious Lessons. *National Collegiate Athletic Association. Proceedings*, 1923: 73.



3. The vast publicity given to athletic activities leads administrators and college executives to use their athletic reputations to advertise their respective institutions, and thus to secure large appropriations from legislators and endowments from the rich.

4. The practice of granting special scholarships to athletes is both degrading and dishonest.

5. Many students matriculate primarily to play on competitive teams and with no desire to acquire an academic education.

6. Students and faculty have control in name only,—with the result that there is too little in common between athletics and education.

7. Faculty members are intimidated for “flunking” athletes. Fear of unpopularity with the student body invites moral cowardice as a recourse.

8. Athletics are too intense for the few. The majority do not find opportunity for participation.

9. Varsity athletes are too much and too long in the limelight. Hence the intellectual program is subordinated to the athletic program. This is an especially detrimental point of view for the high-school student and for the general public.

10. “Scouting” and bidding for athletes makes for professionalism on the part both of the college and of the prospective student.

11. Large gate receipts make for commercialism on the part of the colleges themselves.

12. The scheduling of too many intersectional games, and the long trips involved, cause too much absence and, in turn, a distorted view of the purposes of education.

13. The scouting of opponents’ games is unsportsmanlike and out of keeping with the ideals of college life.

14. Practice sessions are too long, and spring practices tend further to disconcert the student and to divert his aims.

15. The standards of the smaller colleges have been lowered by their efforts to follow the leadership of the universities, to whom they have looked for guidance in correct athletic ideals.

16. Drinking and gambling are increasing as a result of football especially, and this marks the final note in the decadence of American college life.

These alleged evils are not submitted that they may be answered here, nor is it admitted that all these charges are true. They are for unprejudiced meditation. The field is full of reformers. As yet very little has been offered in the way of constructive reform,—a fact which recalls Dr. Sanford’s statement that reformers are “like fruits brought into market after a windstorm, with immense possibilities in

their future but lacking the days and months of rain and of sunshine in order to bring them to ripeness and to fullness.<sup>17</sup>

Leaders of impartial judgement look upon football as only an incident in a complete program of physical education. If football is destructive to the moral and intellectual ambitions to which the college student is entitled, and if this sport is the cause of the drinking, betting, and general dishonesty which are ascribed to it, no time should be lost in striking it out of college life; or if the sole function of college life is to maintain an academic program of training for its students, the program of athletics should be eliminated; but if, by reason of their tremendous power and grip on a sports-loving people, evils over which they have no control are being focused upon athletics, educators of courage and power should step forward and save them for the sake of the desirable moral elements which they involve.

President Angell of Yale had this idea in mind when he said:

We must believe in all sincerity, as I am sure many of us do not, that physical education, including competitive sports, is an essential part of the obligation of the college and in no sense a mere excrescence to be confided to the casual outsider or to the transient apprentice. We must recognize that it stands in the closest possible relation to moral education, which we often pronounce as one of the prime duties of the college, if not, indeed, the very first. We must believe unreservedly in sports for the whole college community, and competitive group sports as far as possible. If, then, physical education in the largest sense is an intrinsic part of the work of the college, why should there longer be hesitation in recognizing that fact, and accepting the full responsibilities which go with it.<sup>18</sup>

Twenty years ago, when intercollegiate football was on trial because of physical dangers to the participants, the late Theodore Roosevelt, ex-president of the United States, saved the game for the good that he thought it possessed. Today, with the game on trial again, this time because of alleged moral and spiritual dangers, there is need of another evolutionary leader instead of a revolutionary one. The game should be lifted up and out of its distortions into its truer plane of inspiration and effectiveness in college life. In reality there is little of serious issue with athletics in the colleges themselves. The disease starts from without,—among the men whose interest is misguided. Undoubtedly adjustments will be made without impulsive and violent change.

<sup>17</sup> S. V. Sanford. Report of the Third District. *National Collegiate Athletic Association. Proceedings*, 1926: 26.

<sup>18</sup> J. R. Angell. The Reconstruction Program for Physical Education in the Colleges. *National Collegiate Athletic Association. Proceedings*, 1918: 44-54.

## REMEDIAL PLANS PROPOSED

Within the past few years five different remedial plans have been proposed to offset the dangers of intercollegiate football. They are the one-year plan, the two-year plan, the four-game plan, the class-team plan, and the double-team plan.

The one-year plan proposes that no student be allowed to participate in an intercollegiate sport for more than one season.

The two-year plan is similar in tendency to the one-year plan. In it are two proposals: it proposes, first, that competition be limited to the junior and senior years; or, second, that competition be limited to the sophomore and junior years, and thus leave the senior year free to give the student a chance to make the more serious preparations for life.

The four-game plan is known as the Wesleyan Parley Plan, and advocates the limiting of the number of intercollegiate contests to four, to be played on successive week ends. Advocates of the plan believe that it would leave so many teams undefeated by the elimination of a number of games that it would lessen the stress now put upon the winning of championships. In reality championships are the creations of the metropolitan daily newspapers. The newspapers reflect public interest. There is such an element of chance in victory when teams meet each other but once each season that it is folly to try to select champions. Undergraduates may look with seriousness upon championships, but it is doubtful if this point is of major concern at present.

The class-team plan originated with Professor Pyre of Wisconsin. It was designed to alleviate the criticism that the long season of competition forced the athletes too much in the limelight and caused too great excitement among the student body in general. It advocates that there be no varsity teams, but that class teams be allowed to play intercollegiate games,— the sophomore team, two games; the junior team, three games; and the senior team, four games. This plan would increase the number of men receiving experience in intercollegiate competition, but it would not pay its own expenses, to say nothing of aiding materially in carrying on the entire physical-education program of the school. The result of such a plan would be the eventual discontinuance of competitive athletics and the consequent blighting of the hopes of the entire play program. There is grave doubt if the American colleges would ever be satisfied with an athletic system that would not culminate in a varsity team.

Ex-president Little of the University of Michigan advocates the double-team plan, which gives promise of solving some of our present

administrative evils. This plan provides that each college shall support two varsity teams in each competitive sport and that when one college plays the other there shall be two games in progress at the same time, one at each school. Aside from offering competition to twice as many men, this plan would do away with college migration, with much of the betting and gambling, and would lessen the tensivity and excitement among the students. Not so much stress would be placed upon the winning of every contest. Many of the present evils would thus right themselves.

Football alone is not responsible for interference with and neglect of school work. Americans enjoy a varied program of activities and organizations. They count their success by the number of organizations with which they may be identified, and thus have a great deal of trouble in finding a proper balance.

Unfortunately the American college student values his college achievements no longer by what he has accomplished in the classroom but by the number of activities with which he is associated.

Again, football is blamed more unjustly than justly for being the cause of drinking and other forms of dissipation among the students. The game simply gives the college student or the alumnus another chance for celebration. Furthermore, there is much evidence to bear out the assertion that it is not the students themselves who drink at their games, but the alumni and migrant public who are seeking a greater thrill than the interest in the contest alone can give them. To win the game is enough pleasure for the average underclassmen, and the drinking at farewell parties after final examinations are over, and at other social functions, undoubtedly exceeds student drinking at athletic contests.

The prevailing spring practices have been much too long. This, however, is a matter that is easy to regulate and does not involve serious danger. These practices are already being cut to fifteen days of one and one half to two hours a day. Previously spring practices have been conducted for forty successive school days, with daily practices lasting from three to four hours. It would be a mistake to eliminate these practice sessions entirely, as they give many students who wish to know something about the games their only chance for actual participation.

We hear little of the thousands of athletes who have graduated and have taken their places as worthy citizens, but we hear much about the undesirable athletes who sift into the institutions and bring them no credit. Many men graduate from college and become prominent in the professions and in business because of their athletic inclina-

tions. Athletics and the urge to play kept them in high school and led them to college. Even though such a primary motive is insufficient, in many instances it helps the boy to the place of larger vision and truer motives.

Of other undesirable students who matriculate and fail to live up to college standards, however, we hear very little. A recent survey was conducted in one of our Mid-Western universities to determine what percentage of the student body was eligible for athletic competition under the present ruling of twenty-seven hours of passing work the preceding semester. The findings were interesting. Out of a total enrollment of 4082 students, 2197 were found to be eligible and 1992 ineligible. But it was the average of the women in class standing that brought the average of the student body a little past the 50 per cent mark. Of the men students, 1240 were eligible and 1461 were ineligible; of the women, 957 were eligible and 531 were ineligible. Perhaps it is unjust to the athlete to focus so much attention upon the undesirable reflection that he brings upon his school when his class grades render him ineligible for intercollegiate competition.

In spite of a mass of such statistics which might be compiled there are those who see no remedy for the evils of the system except the abolition of intercollegiate athletics and the establishment of an extensive system of intramurals which will engage the entire student body in a program of play in their stead. The organization of the American college is such that a spirit of rivalry in intramurals could not be sufficiently aroused to take the place of intercollegiate competition. In spite of the fact that nature has endowed us with wonderful powers of substitution, we should have difficulty in finding something else to take the place of our great team games as they are now enshrined in our competitive civilization. Intramurals will always be more or less "fooling play." Competitive athletics will always be serious play. Even if intramurals could supply, in the physical-education program, the need for recreation, and at the same time build up the physical body so that it can successfully meet life's demands, with the revenue from athletics taken away there would be small chance for an appreciable system of intramurals to exist. The sole source of revenue for athletic and play purposes in many of our colleges is from the gate receipts of football games. Especially is this condition true in the colleges of the South. It seems unjust to say that commercialism is abroad in college life when the extermination of one sport would mean the curtailment of the possibilities of play. When it is a matter of making sports pay for sports, the plan is not commercialism.

## CONSTRUCTIVE SUGGESTIONS

In most of our American colleges intramural play is severely handicapped by the failure of the colleges to supply adequate teaching personnel and thus to encourage participation, and by the failure on the part of the student to possess adequate equipment. Following is a plan whereby the university could purchase and own all such equipment. For an approximate laboratory fee of \$6 a year the college could furnish each student with the necessary equipment for the sports in season, — this to include clothing, balls, gloves, bats, foils, etc.

The sports for which such equipment should be furnished would include football, baseball, track, basket ball, tennis, boxing, handball, cross-country, quoits, armory ball, etc. All equipment would be checked out to the student, who would be responsible for it while it was in his possession. If the student should choose another sport after he has checked out equipment, he could make the change from one sport to another by returning all equipment previously checked out.

Following are estimated accounts of the retail cost of gymnasium equipment to each student under the present plan, the estimated cost to each student of additional equipment for the various sports, and the estimated cost per student to the college if this plan were carried out :

| ESTIMATED COST OF GYMNASIUM<br>OUTFIT PER STUDENT   | ESTIMATED COST OF ADDITIONAL<br>SPORTS EQUIPMENT PER STUDENT  |
|---|---|
| Shoes . . . . . \$4.50<br>Gym pants . . . . . 1.00<br>Jockey strop . . . . . 1.00<br>Sweat socks . . . . . .50<br>Sweat shirt . . . . . <u>1.50</u><br>Total . . . . . \$8.50 | Baseball suit . . . . . \$10.00<br>Baseball cap . . . . . 1.00<br>Baseball shoes . . . . . 5.00<br>Baseball bat . . . . . 2.00<br>Baseball glove . . . . . 5.00<br>Football suit . . . . . 15.00<br>Football shoes . . . . . 8.25<br>Track shoes . . . . . <u>7.50</u><br>Total . . . . . \$53.75 |

Thus we see that, under the present plan, the student desiring to participate in football in the fall, basket ball or track in the winter, baseball or track in the spring would have a total approximate expenditure of \$8.50 for a gymnasium outfit which could be used in part for both basket ball and track, and \$53.75 for additional sports equipment, or a total of \$62.25 for intramural equipment. This cost makes intramurals as we should like to see them developed prohibitive to all students except the few who are financially favored.

ESTIMATED COST FOR EACH STUDENT IF THE COLLEGE WOULD FURNISH  
INTRAMURAL EQUIPMENT

|   |  |                |
|---|--|----------------|
| Cost of total equipment listed above, less 30 per cent when purchased by<br>the school at wholesale price . . . . . |  | \$43.58        |
| Three towels a week for each student (3 cents each) . . . . .   |  | 3.24           |
| Estimated wear and tear by usage on equipment of each student . . . . .   |  | 3.49           |
| Total cost a year for each student . . . . .  |  | <u>\$50.31</u> |

Under the plan of a \$6 college athletic fee for gymnasium and intramural equipment each student would enjoy a full year of supervised competitive intramural play at a cost less than the estimated cost of a gymnasium outfit for the year. Thirteen sports could be indulged in for less than the retail cost of one. At present many students do not choose to go out for seasonal intramurals on account of the expense of the necessary equipment.

To the college or university supporting this plan there would be an average cost of \$50.31 the first year for each student. This fact brings up at least six items for immediate consideration:

First, in order to furnish equipment and towel service for a fee of \$6 the school would be compelled to buy direct from the manufacturers.

Second, the present teaching personnel would need to be doubled. Every student who previously had played without supervision would immediately undergo a change of attitude. He would feel that a very definite play program had been worked out for his benefit, and he would no longer drift aimlessly into unsupervised play.

Third, in order to care effectively for the necessary equipment the basket system would be necessary, instead of the many private lockers of the system in use heretofore. Many of the larger universities have already installed the basket system, as it insures maximum cleanliness and sanitation. Spaces now taken up by rows of private lockers could then be converted into handball courts, wrestling and boxing rings, etc., or into additional space for the thousands of suits and pairs of shoes that would be needed under the proposed system of intramural equipment. Space for equipment alone would occupy the entire basement of a large building. An attendant at all hours would be imperative to keep losses at a minimum.

Fourth, to induce state legislatures to appropriate funds sufficient for the purchase of equipment to give this plan a trial would be next to impossible. In view of the fact that many schools are paying off bonded indebtednesses against their stadia, athletic associations are not in position to divert much money into other channels. If some agreement could be reached which would permit athletic associations to set aside stipulated sums from the gate receipts each year for the purchase of

additional playgrounds and equipment, this plan of university-owned equipment could soon be realized.

Fifth, the state should bear the additional expense of the increased faculty instruction required for the enlarged program.

Sixth, after a period of two or three years, student fees would make such a plan self-supporting, and at the same time would supply the play service to student life which is as yet an unrealized dream.

As fast as bonded indebtednesses can be liquidated the building of field houses and separate gymnasiums for men is being included in the play-expansion program. During inclement weather there is need everywhere for more indoor playing space. The space under many stadia is being utilized for track, squash, handball, rifle firing, archery, boxing, wrestling, and baseball practice; but still more space is needed for group games such as basketball, indoor baseball, etc. during the months when the weather is unfit to be out of doors.

Open-air pavilions of vaulted steel-ribbed construction, lighted, and inclosed with wire netting, would do much to provide ample facilities for intramural basketball tournaments and other indoor games. Such pavilions could be used also for student picnics, dances, and other social gatherings in the spring and fall, when the weather would ordinarily drive the recreationists indoors. Outdoor ovens could be built at nominal cost in adjacent spots where such gatherings of students could enjoy all the pleasures of the out-of-doors.

### THE STATE AND PHYSICAL EDUCATION

Every state in the United States should be maintaining a state department of physical education within the department of education. This department should organize and direct the physical-education programs of all public schools within the state.

Although Hungary has been slow to organize a complete program of physical education, it has passed three laws which lead the world. One law requires two hours of physical-education work each week for all men between the ages of fourteen and twenty-one, regardless of whether the men are in school or at work outside. This law is administered by the government.

A second law requires a tax of 2 per cent on all tickets for competitive exhibitions, and the money thus obtained is used solely to carry out the program of physical education.

The third law gives the government power to regulate the playing of all games and sports, and thereby prevents any one sport from becoming too popular. Soccer is the most popular game in Hungary, but



basket ball, track, and a game similar to baseball are growing in popularity. Thus no one sport can become over-emphasized.

Every state in the United States should be maintaining a tax of at least 2 per cent on all competitive exhibitions, both professional and amateur. Funds thus acquired should be used to further the program of physical education in the elementary, junior-high, and high schools, and the junior colleges of the state wherein the tax is levied. At present, funds are wholly inadequate for the purchase of playing space to carry out effective programs in many of these schools. Rural schools are especially in need of such aid.

In addition to this state tax on all competitive exhibitions the United States should levy a government athletic tax of 1 per cent on the gate receipts of all competitive contests, both professional and amateur, to be used solely for the furtherance of a national program of physical education in public schools. This tax should serve purposes in the furtherance of the program of national physical education similar to the purposes served by the state and Federal aid in the building of roads and highways. In localities where the state would be unable to care adequately for its own needs by its own athletic tax of 2 per cent the government, through the department of education, could aid.

The present situation of physical education and athletics in America is hopeful. In the next few years many constructive changes will be brought about. The American playground movement and the increased impetus, in school, college, and university life, for more play space and play facilities will eventually put a national evaluation upon sport for the richness of its benefits, and every American will get a chance to play.

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## CHAPTER XX

### THE BOARD OF CONTROL

By EDWARD C. ELLIOTT, President Purdue University

#### HIGHER EDUCATION AS A PROBLEM OF GOVERNMENT AND OF ADMINISTRATION

The primary purpose of this chapter is to set forth briefly for the student of educational institutions and their administration the leading features of the generally prevailing mode of control for our higher schools as this is represented by the principal legal agency created for this purpose. This agency is known variously as the board of trustees, the board of regents, the board of overseers, the board of education, the board of curators, the board of visitors, etc., and will be referred to generally as the board of control.

The distinctive and pervading influences — political, religious, economic, and cultural — of higher institutions of learning, especially since the period of the rise and power of the medieval universities, have been clearly and continuously recognized by all modern governments as well as by those concerned with the public weal. It is not strange that the questions of the organization and control of higher schools in the United States, from the colonial beginnings down to the present moment, have been considered of great civic importance. The extraordinary expansion and the marked intension of higher education in the United States, notably in the decade following the World War, have served to focus new public as well as new professional attention upon the modes of conduct of our colleges and universities. A sweeping glance over the field will perhaps furnish some background for the appreciation of the new importance which has come to be attached to the mechanisms by which these higher educational agencies are controlled and administered.

During the past three decades the population of the United States has increased approximately 75 per cent. Within this period the number of students, in educational institutions classified as "higher," has increased approximately 400 per cent, or five times more rapidly than

the population ; the number of such institutions has almost doubled ; college and university graduates have become twice as numerous. The latest available data upon higher education for the whole country<sup>1</sup> show the number of colleges, universities, and professional schools for 1925-1926 to be 975, having 62,224 members of the teaching staff and 822,895 students. Of this group of institutions 154 are under public control and 821 under private control. The institutions range from the small college, maintaining the traditional liberal-arts courses, to the cosmopolitan organization of certain of our great universities, both state and nonstate, numbering their students by the tens of thousands. Numerous independent schools of theology, law, medicine, dentistry, pharmacy, and veterinary science are included in this higher classification. The estimated value of the buildings, grounds, and equipment of the higher institutions is more than a billion dollars. Their productive funds amount to another billion, and their total annual income is somewhat less than five hundred millions. If there were included in these data those for the normal schools and teachers' colleges of the country (which must now be reckoned as essential parts of our modern scheme of higher education), and also the rapidly developing junior colleges, the resulting totals would gain in significance.

The accepted doctrine of equality of educational opportunity has found its most impressive application in the ready accessibility and wide variety of the facilities for advanced study. In a single generation the chances of the normal American boy or girl to secure higher training have increased not less than tenfold. It is evident that the peak of the new growth has not yet been reached. Prevailing educational philosophy and unprecedented economic prosperity are joining together for the stimulation of the entire higher educational enterprise to new heights and to new volume.

No longer, then, is the character, or the effectiveness, or the operation of the higher schools a concern of the selected few. The democratic many have easily come to accept these schools as an essential part of that comprehensive plan of education in which they have an inalienable interest.

The state, the church, all social classes, all professions, indeed, all fundamental agencies in civilization, have been compelled to take account of a situation which is entirely new in the world. Little wonder, then, that new issues involving the government and administration of higher education have been raised for our day. There is to be observed a new disposition to examine critically, to experiment with

<sup>1</sup> Biennial Survey of Education, 1924-1926. *United States Bureau of Education Bulletin, No. 25*, 1928.

and to reconstruct, the long-established forms of government and the modes of administration of these institutions. In a vague sort of way the civic mind feels that the rate at which the educational ideals of democracy are to be realized is, in a large measure, limited by the development of new agencies of authority and responsibility in the universities, the colleges, and other higher schools. After all, the final test of the modern social faith in and social ability for education is to be found in the skill and promptness by which institutions are adapted to the conditions of life as created by modern science, modern industry, and modern ideals. Such adaptation is for the most part the product of political and governmental machinery, which reflects the spirit and releases the power of the age.

### HISTORICAL BACKGROUND<sup>2</sup>

The problems and the character of higher education, in so far as these have become centered in controlling boards, belong to the present and the future rather than to the past. Nevertheless, our existing institutions are the direct descendants of the past, and their inherited characteristics may not be wholly disregarded if we are to value intelligently the nature of what we have in the present. Therefore it is not irrelevant to our purpose to urge and to emphasize the enduring importance of the influence of the first American institutions of higher rank upon later academic government.

<sup>2</sup> An understanding and appreciation of the principles and practices of the government of present-day higher institutions of learning cannot be had without some familiarity with the historic beginnings of our college and university system. The article on "Universities," by J. B. Mullinger, in the *Encyclopædia Britannica* (eleventh edition), gives a brief, readable, and authoritative account of the European origins. Every student of the American college and university as institutions should have read Hastings Rashdall's "Universities of Europe in the Middle Ages" (Clarendon Press, 1895); also Friedrich Paulsen's "German Universities and University Study" (authorized translation by Frank Thilly and W. W. Elwang) (Scribner, 1906). Charles F. Thwing, in his "History of Higher Education in America" (D. Appleton and Company, 1906), presents a body of interesting and valuable historical material.

All the older American university foundations have special histories which furnish a perspective for modern problems. The following are worthy of reading for the early developments:

Josiah Quincy. *History of Harvard University*, 2 vols. Owen Publishing Co., 1840.

L. G. Tyler. *College of William and Mary in Virginia: its History and Work, 1693-1907*. Boston. 1907.

F. B. Dexter. *Sketch of the History of Yale University*. Henry Holt and Company, 1887.

H. B. Adams. *Thomas Jefferson and the University of Virginia*. *United States Bureau of Education. Circular of Information No 1*, 1888.

Within the imposed limits of these pages it is scarcely possible to do more than to spot on the historical map a very few of the places and spaces from which came the beginnings of the American collegiate strain and spirit.

It was chiefly English seed that was sown by the pioneer cultivators of the new institutions in the new land. The virgin soil was often unproductive because of the necessities and poverties of the frontier. The sharp and uncertain winds of self-centered localism, religious prejudice, and political partisanship made a rigorous and harsh climate for the successful culture of the field of learning. But, once rooted, the fresh growths proved hardy, and they received a care that could come only from a rare devotion and a self-denying idealism. The stewards of the causes well knew the long and large price to be paid that there might be leadership for freedom and opportunity in the new world.

The epochal stages in the development of the forms and functions of government for American institutions of higher learning are marked by the changing relationships, the frictions, and the conflicts of State, Church, and School. From the period of the Renaissance down to the present day each of these great institutional creations of and for human culture has struggled for its own power and independence and for a certain dominancy of the affairs of mankind.<sup>3</sup> When we call to mind that the early foundations of our higher educational system were laid during the seventeenth and eighteenth centuries, the most critical period of this struggle, we should expect to find evidences of the struggle even in the land of a new social order. The designers of these foundations imitated and invented. They imitated when they could not invent, and they invented when they feared to imitate.

Brief references to the governmental characteristics of certain of the early and influential collegiate foundations will afford a clearer insight into what has gradually become the American plan of control. For this purpose first mention will be made of the first three higher institutions founded in the colonies, whose work continues to the present day. In spite of the smallness of their numbers and the narrow simplicity of their educational programs each of these institutions left lasting marks upon the later higher educational organizations.

When the General Court of the Colony of Massachusetts Bay agreed, in 1636, "to give four hundred pounds toward a school or

<sup>3</sup> See, for instance, Henry Suzzallo, Declaration of Independence for Public Education. *National Education Association. Addresses and Proceedings*, 1927 : 23-32; also in *School and Society*, 26 : 89-96, July 23, 1927.

college, whereof two hundred pounds to be paid the next year, and two hundred pounds when the work is finished, and the next Court to appoint where and what building," a corner stake was set for the building of what was shortly, in 1639, to be called Harvard College, the first and for many years the foremost of our collegiate structures. With this establishment begin nearly three centuries of American experience in the organization and government of higher schools.

The evolution of the governmental agencies of the first colonial college resulted in a distinctive type of institutional control, and during the process many of the fundamental and permanent issues of institutional government were developed and decided in a definite way. A summary of the principal stages in the history of the Harvard government will be of interest and value.<sup>4</sup>

The first governing committee "to take order for a college at Newtown" was a conventional makeshift, natural under the colonial circumstances. This committee, appointed in 1637, was made up of twelve of the prominent men of the colony, six of whom were officers of the colony, including the governor and the deputy governor, and six clergymen from neighboring towns. Under an act of the General Court the control of the college was delegated, in 1642, to the "Overseers of Harvard College," to include the governor, the deputy governor, all the magistrates of the jurisdiction, the teaching elders of the six adjoining towns, and the president of the college. As was the case with many later institutions a board of this size and constitution proved unsuited to exercise a responsible direction of the college. In consequence the General Court, in 1650, granted a charter by which the college was made a corporation, consisting of the president, five fellows, and a treasurer, to have perpetual succession by the election of members to supply vacancies and to be called the "President and Fellows of Harvard College." This charter provided that all the acts of the corporation were subject to the approval of the overseers. An appendix to the charter, in 1657, says:

The corporation shall have power, from time to time, to make such orders and by-laws, for the better ordering, and carrying on of the work of the college, as they shall see cause, without dependence upon the consent of the overseers foregoing. *Provided always*, that the corporation shall be responsible unto, and those orders and by-laws shall be alterable by, the overseers according to their discretion.

<sup>4</sup> Elsie W. Clews. *Educational Legislation and Administration of Colonial Governments*. Columbia University, 1899. This contains the text of legal enactments relative to all colonial collegiate establishments. The annual *Official Register of Harvard University* contains an illuminating statement of the government and history of the institution.



The basic provision of the charter of 1650, establishing a dual form of control (the corporation and the overseers) has continued to the present time. The prime powers and the central authorities of the corporation have remained unchanged.<sup>5</sup> The membership of the board of overseers, however, has undergone a number of important changes. The constitution for the new commonwealth, adopted in 1780, recognized and continued the rights and powers of the corporation and provided for the necessary reorganization of the board of overseers.

It is declared that the Governor, Lieutenant Governor, Council, and Senate of this Commonwealth are and shall be deemed their successors; who with the President of Harvard College for the time being, together with the ministers of the Congregational churches in the towns of Cambridge, Watertown, Charlestown, Boston, Roxbury and Dorchester, mentioned in the said Act, shall be, and hereby are, vested with all the powers and authority belonging or in any way appertaining to the Overseers of Harvard College. *Provided*, that nothing herein shall be construed to prevent the Legislature of this Commonwealth from making such alterations in the government of said University as shall be conducive to its advantage, and the interests of the republic of letters, in as full a manner as might have been done by the Legislature of the late Province of the Massachusetts Bay.

In 1810 the number of ministers of the Congregational Church on the board of overseers was increased to fifteen, and fifteen layman members were added. The senate of the commonwealth was made a part of the board of overseers by an Act of 1814. Clergymen of all denominations were made eligible in 1834. The board was reconstituted in 1851 so as to consist of the governor, lieutenant governor, president of the senate, speaker of the house of representatives, secretary of the board of education, and president and treasurer of the college, together with thirty other persons, to be chosen by the legislature. A more significant change was made in 1865, when the ex officio members of the board from the state government were eliminated and the power to elect all the overseers was transferred from the legislature to the graduates of the college. Later amendments defined and confirmed the authority of the alumni in the selection of the overseers.

It is entirely beyond the scope of this chapter to attempt to analyze the play and the counterplay of the social influences that led to the progressive development of the Harvard type of control. They were

<sup>5</sup> "It is a curious and interesting fact that the university with the most fortunate organization in the country is the oldest university. Its principal governing board, the President and Fellows of Harvard College, consists of seven men, who still act under the charter of 1650, in which no line or word has ever been changed." (Charles W. Eliot, *University Administration*, p. 6. Houghton Mifflin Company, 1908).

many and varied. This much must, however, be recognized. The substance of the education transplanted to Massachusetts was English. The composite educational background of the founders and the early conservators of Harvard College was that of the two great English universities of the day. Even so, for the complicated college and university governments then known as Oxford and Cambridge there was early substituted and established that dual yet simple mechanism represented by the corporation and the overseers. This mechanism was based upon principles which seem to have a modern reality and validity,—the small, compact, and continuous corporation, capable of direct and responsible action, and the overseers, in theory at least a democratic instrument of check and of constructive oversight.

The gradual withdrawal of the government as a direct factor in the management of the institution, the elimination of the denominational representatives from the overseers, and the fixation of the plan and power of the alumni through the election of the overseers may be said to account for the independence, the individuality, and the integrity of this institution.

The College of William and Mary, in Virginia, the second of the American collegiate line, dates its foundation from a royal charter granted by the crown in 1693.<sup>6</sup> This charter definitely embodied the English tradition of academic government. The president and faculty were constituted the corporation,—the "President and Masters, or Professors, of the College of William and Mary, in Virginia." A self-perpetuating board of "Visitors and Governors," consisting of eighteen men ("or any other number not exceeding the number of twenty"), was provided for. Each year the board was to choose a rector from its own membership, and every seven years a chancellor of the college. The charter specified that the Bishop of London should be the first chancellor.

A study of the complicated provisions of this charter, especially those containing the overlapping and conflicting powers of the corporation and the board of visitors, prepares one for the historical fact that from the beginning down to the outbreak of the Revolution the relative power of the two boards (the president and the faculty, as the corporation, and the board of visitors) provoked much controversy and virulent debate.

The form of government under which was developed that institution frequently referred to as the Mother of Colleges cannot be considered as unimportant. Yale traces its foundation to an act for a collegiate school ("wherein youth . . . may be fitted for public employment both

<sup>6</sup> Clews, *op. cit.* pp. 361 ff.

in church and civil state") passed by the colonial legislature of Connecticut in 1701.<sup>7</sup> This act provided for a self-perpetuating governing body of ten "trustees, partners, or undertakers," to have

the oversight, full and complete right, liberty, power and privilege to furnish, direct, manage, order, improve and encourage from time to time, and in all times hereafter, the said collegiate school so erected and formed by them, in such ways, orders and manner and by such persons, rector, master and officers appointed by them as shall according to their best discretion be most conducive to attain the aforementioned end thereof.

Given the name of Yale College in 1718 in honor of a substantial benefactor, the institution struggled and managed to survive the ordeals of poverty and controversy. In 1745 the act of 1701 was revised and enlarged. The new charter gave the institution its present corporate form of "The President and Fellows of Yale College in New Haven." Subsequent amendments added various members to the corporation, which now includes, in addition to the president, the governor and lieutenant governor of the state, six graduates elected for six-year terms by vote of the graduates of five or more years' standing, and ten Fellows, known as the successors of the Original Trustees.

Thus was established and developed at Yale the first single board type of control, which has become the normal type for our higher institutions. The advantages of fixing authority and responsibility in a single board were early set forth by the first President Dwight of Yale (1795-1817).

The existence of a board with no power to originate, but with the right to negative the measures of a smaller body, renders the government uncertain, prolix, and indecisive, furnishes room for the operation of multiplied personal interests, prejudices, intrigues, and unfortunate compromises; and generally prevents the order, energy, and decision attendant upon a single board. A body of Overseers, occasionally called together to meddle with the affairs of a college, will usually feel so little interest in them, except at the moment, as never to be in possession of the system intended to be pursued; the wisdom, and expediency, of one part of which will often depend more on its relation to the other parts, than on its own nature. Often they will not come together, at all, in such numbers as to form a quorum; and will thus prevent the accomplishment of the business, for which they were summoned. The very numbers of which they consist, will of course include many, who are incompetent judges of academical concerns; and many more, who will never take pains to inquire into their nature, or to possess themselves of that judgment which their capacity would in better circumstances enable them to form. Their decisions, therefore, will often be sudden; often crude; and not unfrequently hostile to the very interests, which they would wish to promote. To secure the prosperity of

<sup>7</sup> Clews, *op. cit.* pp. 120 ff.

such an institution, it is indispensably necessary, that a system, embracing all its interests for a considerable period at least, should be carefully formed, and closely pursued. All, who are to vote, should distinctly understand this system; and, whenever they come to act, should have it fully in their minds; so as to comprehend readily the relation, which every new measure has to the general scheme, and its proper influence on measures already adopted. This can be done, only by a long-continued, and minute acquaintance with the affairs of the institution; and can never be done by men, who, occupied busily in totally different concerns, come rarely and casually, to the consideration of these. The votes of such men will be governed by the impulse of the moment; by whim; by prejudice; by attachment to a friend, or a party; and sometimes, not improbably, by the mere fact, that their duty requires them to vote: when, perhaps, they are wholly at a loss whether the vote, actually given, will be useful, or mischievous. If such a system be not so pursued; the interests of a public seminary can never become prosperous, unless by accident, or by the peculiarly meritorious labors of a wise and vigorous Faculty; overcoming many disadvantages, and preventing with uncommon prudence, and felicity, the mischievous effects of indigested, desultory regulations.<sup>8</sup>

It is timely to note certain other historical events, the consequences of which have had a marked effect on the governmental organization and procedures of our higher education.

The incorporation, by the legislature of Rhode Island in 1764, of the "Trustees and Fellows" of that institution which forty years later received the name "Brown University," initiated a form of more or less permanent denominational control<sup>9</sup> of collegiate institutions. By the terms of Brown's charter a bicameral government was established, each of the two self-perpetuating branches (the trustees and the fellows) having separate powers. The trustees were to have a membership of thirty-six,—twenty-two Baptists, five Quakers, four Congregationalists, and five Episcopalians. The number of fellows, including the president, was fixed at twelve,—eight Baptists and the remainder "selected indifferently of any or all denominations." The president was forever to be a Baptist.

This charter, yet in force, was regarded at the time of its granting as a monument of educational freedom. Its detailed provisions<sup>10</sup> make an illuminating commentary upon the religious and educational spirit of the period.

<sup>8</sup> Timothy Dwight. *Travels in New England and New York*, 2:212-213. Published by the author, 1821. This quotation is also available in Charles F. Thwing's "History of Higher Education in America," pp. 73 ff. D. Appleton and Company, 1906.

<sup>9</sup> Monell Sayre. *Denominational Control of Colleges and Universities*, in *Monroe's Cyclopedia of Education*, 2:109-110. The Macmillan Company, 1911.

<sup>10</sup> Clews, *op. cit.* pp. 185 ff.

The granting of a charter to Dartmouth College in 1769 by the royal governor of the colony of New Hampshire proved to be the beginning of a series of events of transcendent importance, not alone to educational institutions but to the entire American social organization. The climax of these events was reached when the opinion of the United States Supreme Court was pronounced in 1819 by Chief Justice Marshall in the historic Dartmouth College case. The effort of the state of New Hampshire to alter the charter of 1769 without the consent of the corporation was held to be unconstitutional and void,<sup>11</sup> and thereafter the administrative development of higher education was along an entirely new route.

The decision in the Dartmouth College case put an end to efforts directed toward governmental regulation of educational close corporations; but in so doing it turned the full force of this movement into that other possible cause of governmental agency — namely, the establishment and maintenance of colleges and universities under full state control.<sup>12</sup>

During the several decades immediately before the critical Dartmouth controversy numerous efforts, some of them successful, had been made in the different states to subordinate the private educational corporations to legislative authority. The movement for direct state promotion and control is to be detected in many places. Here and there developments show a distinct French influence for comprehensive centralization. Most of the new state constitutions which followed the Revolution made some provision for the educational system, not infrequently including a university.

The University of Georgia, said to be the earliest state university in the United States, was chartered in February, 1784, and endowed with forty thousand acres of land. By the amended charter of 1785 all public education in Georgia was made a part of the University of Georgia. While this ambitious plan was not carried out, there is yet to be observed, in the organization of the University of Georgia, traces of the early conception.

With the establishment, in 1784, of a "Board of Regents of the University of the State of New York" there was projected a unique and comprehensive state system of undoubted French origin. Of this King's College, chartered in 1754, and now renamed Columbia, was to be the center. While the plan to absorb Columbia in the state system did not succeed, the board of regents has continued down to the

<sup>11</sup> The Trustees of Dartmouth College *v.* Woodward, 4 Wheaton 514.

<sup>12</sup> E. E. Brown. *The Making of Our Middle Schools*, p. 291. Longmans, Green & Co., 1903.

present with general supervisory powers over all schools, nonstate as well as state.

In the establishment of the University of Virginia, in 1819, there is to be found not only evidence of the genius of Thomas Jefferson but the early concrete form of the conception of a state university in its modern sense.

#### EXISTING FORMS OF BOARDS OF CONTROL

An examination of the constitution of the board of control which has come to be utilized as the principal agency for the direction of each of the characteristic types of American higher institutions (that is, the state and the nonstate) reveals extreme differences as to the size of the board and as to the methods of selection, qualifications, and length of term of members. Striking variations in the legally designated duties and powers of this board are likewise to be found. All this is normally to be expected if proper consideration is given to historical beginnings and to the rise and decline of the many social forces which in particular give form and character to educational institutions.

While these boards may be said to appear to be kaleidoscopically different, in reality they represent the adoption of one general governmental device. This may be broadly described as that of a lay board of trustees, of varying number (the range is from five to more than one hundred, seldom less than seven and seldom more than thirty), appointed for terms from one year to life, serving without compensation, meeting infrequently, having in general the powers of a private corporation, and, subject to the specific provisions of charters and statutes, exercising final jurisdiction over all matters relating to institutional property and to the conduct of all financial and educational operations. The principal exceptions to the various details of this description are to be found in the institutions under the strict auspices of certain churches, notably those maintained by the Roman Catholic Church. Even with certain of these there is a lay board of trustees with restricted powers.

The following summary<sup>13</sup> of the methods of selection used in a large group, consisting of both state and nonstate institutions, is indicative of a range of other differences.

<sup>13</sup> Revised and expanded from a similar summary to be found in the *Bulletin of the American Association of University Professors*, 6: No. 3, March, 1920. It is not unlikely that in certain instances incorrect items will be found. Minor changes are constantly being made in the constitution of the boards of both state and non-state institutions.

1. *Appointed by governor* (usually with confirmation by state senate):<sup>14</sup>

State Universities of Arkansas, California, Florida, Georgia (one life member), Idaho, Iowa,<sup>15</sup> Kansas,<sup>15</sup> Kentucky, Louisiana, Maine, Minnesota, Mississippi, Missouri, Montana,<sup>15</sup> New Mexico, North Carolina (by legislature), North Dakota, Ohio State, Oklahoma, Oregon, Purdue (three by alumni), South Carolina (by legislature), South Dakota,<sup>15</sup> Tennessee, Texas, Virginia, Washington, West Virginia,<sup>16</sup> Wisconsin, and Wyoming.

2. *By popular election*:

Colorado, Illinois, Michigan, Nebraska, and Nevada.

3. *By coöptation*:

Alabama (self-perpetuating, with confirmation by state senate), Beloit, Carleton, Chicago, Haverford (by a corporation), Johns Hopkins, Knox, Stanford and Vassar.

4. *Partial coöptation* (with alumni representatives):

Amherst (alumni), Brown (alumni choose one third), Columbia (six alumni), Cornell (faculty and alumni representation), Knox (three alumni), Ohio Wesleyan (alumni and representatives of the Methodist Conference), Pittsburgh (one alumnus), Wellesley (alumnæ), Wesleyan (trustees are elected by Methodist Conference; in part by alumni), Yale (alumni), Bowdoin (similar to Harvard), Harvard (two governing bodies: one larger body of overseers elected by alumni; a smaller body comprising a chief executive body, self-elected; its actions are subject to confirmation by overseers), Pennsylvania (all by alumni), Princeton (twenty-seven life trustees, elected by the board; three regional trustees; five alumni trustees).

The chart appearing on page 612 shows some of the more important institutional relations and details of control of a characteristic state system of higher education.

## POWERS AND DUTIES OF BOARDS OF CONTROL

The powers and duties of boards of control, in the case of the so-called private-foundation institutions, are defined in the corporate charters<sup>17</sup>; and in the case of the state institutions such powers and duties are provided by state constitution, by statute, or by the administrative regulations of various supervisory departments of state government.

<sup>14</sup> In more than half the state universities boards of control contain one or more ex officio members, — governor, state superintendent of public instruction, etc.

<sup>15</sup> One board of control for all higher educational institutions.

<sup>16</sup> Board of Regents coöperates with the State Board of Control, which administers the business affairs of all state educational institutions.

<sup>17</sup> Consult L. W. Bartlett's *State Control of Private Incorporated Institutions of Higher Education* (Teachers College, Columbia University, Contribution to Education No. 207 (1926)) for an analysis of the relation of the state to such institutions.

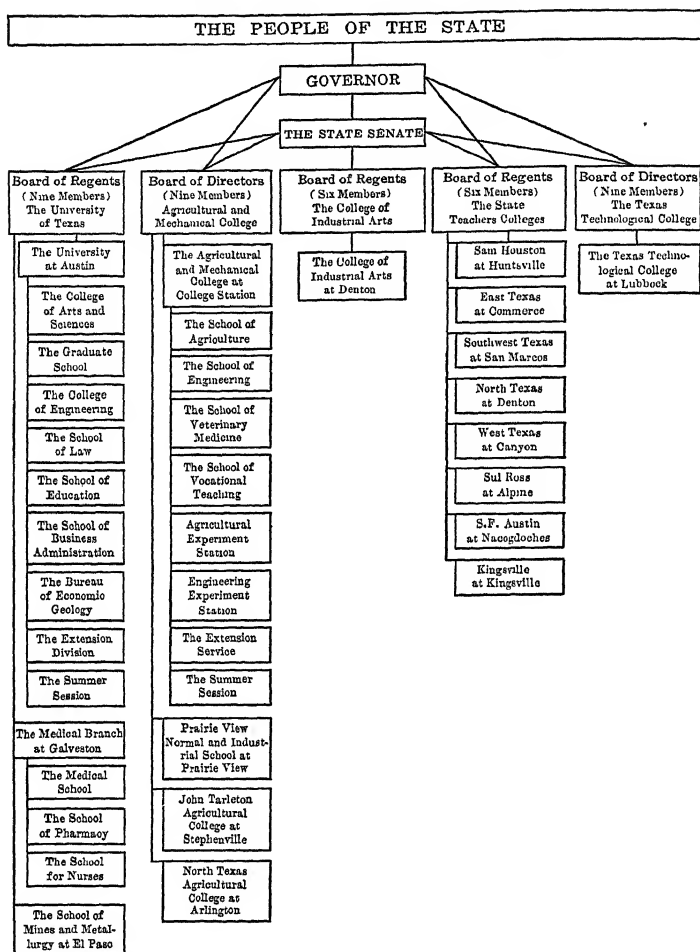


FIG. 1. Chart showing organization of a characteristic state system of higher education. (Texas Institutions of Higher Learning)<sup>18</sup>

Within the prescribed limits of their charters, the jurisdiction of the boards of control, created for the institutions founded during the colonial period, was assumed to be exclusive and complete. The board was the active and central source of governmental authority. It held

<sup>18</sup> Reproduced, by permission, and with slight modifications, from Texas Educational Survey Report (Austin, Texas, 1925), Vol. VI.



the title to, and was charged with the control and management of, all property of the institution. The care of trust funds and endowments, the allotment and expenditure of all operating funds, the authorization of all appointments, the fixing of salaries, the granting of degrees and honors, and the determination of educational policies represent the more customary specifications of the early charters. Besides, there is usually to be found in the charter a broad saving clause such as that in the Harvard charter of 1650, "and to make from time to time such orders and by-laws for the better ordering and carrying on of the college as they shall see fit," and that of the amended charter of 1745 of Yale, "That the president and fellows shall have the government, care and management of said college, and all the matters and affairs thereunto belonging, and shall have power, from time to time as occasion shall require, to make, ordain and establish all such wholesome and reasonable laws, rules and ordinances, not repugnant to the laws of England, nor the laws of this colony, as they shall think fit and proper, for the instruction and education of the students."

The authority of the boards of control of all our higher institutions in general is of similar scope, save of course that practically all state-supported colleges and universities are organized under legislation which subjects their powers and duties to the hazard of frequent change. In one state only, Michigan, the state higher institutions are safeguarded by the constitution from uncertain legislative interference.<sup>19</sup> The particular provisions of this constitution are noteworthy.

3. There shall be a board of regents of the university, consisting of eight members, who shall hold office for eight years. There shall be elected at each regular biennial spring election two members of such board. When a vacancy shall occur in the office of regent it shall be filled by appointment of the governor.

4. The regents of the university and their successors in office shall continue to constitute the body corporate known as "The Regents of the University of Michigan."

5. The regents of the university shall as often as necessary elect a president of the university. The president of the university and the superintendent of public instruction shall be ex officio members of the board of regents with the privilege of speaking but not of voting. The president shall preside at the meetings of the board and be the principal executive officer of the university. The board of regents shall have the general supervision of the university and the direction and control of all expenditures from university funds.

6. The state board of education shall consist of four members. On the first Monday in April, 1909, and at each succeeding biennial spring election, there

<sup>19</sup> Consult *Sterling v. Regents*, 110 Michigan 369; *Bauer v. State Board*, 164 Michigan 415; and *State Board of Agriculture v. Auditor*, 180 Michigan 349, for important judicial interpretations of the limitations of legislative authority.

TABLE I. TYPES OF BOARDS OF CONTROL

| NAME OF INSTITUTION<br>AND OF BOARD   | DATE<br>OF<br>FIRST<br>FOUND-<br>ATION | TOTAL<br>NUM-<br>BER OF<br>MEM-<br>BERS | COMPOSITION OF MEMBERSHIP    |  |                         |
|---|--|---|------------------------------|--|-------------------------|
|   |  |   | Appointed or Elected Members |  |                         |
|   |  |   | <i>Number</i>                | <i>How Chosen</i>  | <i>Term<br/>in Yrs.</i> |
| <i>Alabama, University of<br/>Board of Trustees</i>   | 1820                                   | 13                                      | 11                           | Board self-perpetuating, elections<br>subject to confirmation by state<br>senate   | 12                      |
| <i>Cincinnati, University of<br/>Board of Directors</i>   | 1872                                   | 9                                       | 9                            | Appointed by mayor of city   | 8                       |
| <i>Columbia University<br/>Trustees of Columbia<br/>College</i>   | 1754                                   | 24                                      | 24                           | Self-perpetuating. Six trustees<br>nominated by alumni for six-<br>year terms  |                         |
| <i>Cornell University<br/>Board of Trustees</i>   | 1865                                   | 43                                      | 35                           | One life member (eldest male de-<br>scendant of Ezra Cornell), five<br>appointed by governor, fifteen<br>by trustees, ten by the alumni,<br>one by state grant, and three<br>by university faculty | 5, 1                    |
| <i>Hanover College<br/>Trustees of Hanover<br/>College</i>  | 1827                                   | 32                                      | 32                           | Self-perpetuating, four on nomina-<br>tion of alumni and eight on nom-<br>ination of Presbyterian Synod<br>of Indiana  | 4                       |
| <i>Harvard University<br/>a. President and Fel-<br/>lows of Harvard<br/>College<br/>b. Board of Overseers</i> | 1636                                   | 7                                       | 7                            | Self-perpetuating<br>By alumni   | 6                       |
|   |  | 32                                      | 30                           |  |                         |
| <i>Illinois, University of<br/>Board of Trustees</i>  | 1867                                   | 11                                      | 9                            | Popular election   | 6                       |
| <i>Indiana University<br/>Trustees of Indiana<br/>University</i>  | 1820                                   | 8                                       | 8                            | Five elected by state board of edu-<br>cation, three by alumni   | 3                       |
| <i>Massachusetts Institute<br/>of Technology<br/>The Corporation</i>  | 1861                                   | 54                                      | 50                           | Thirty-five coöpted life members,<br>fifteen by alumni   |                         |
| <i>Northwestern University<br/>Board of Trustees</i>  | 1851                                   | 44                                      | 44                           | Thirty-six coöpted by corporation<br>for periods of four years, nine<br>being elected each year  | 4                       |
|   |  |   |                              | Eight trustees elected by four con-<br>ferences of Methodist Church,<br>one member annually by each<br>conference for period of two years  | 2                       |
| <i>Purdue University<br/>Trustees of Purdue<br/>University</i>  | 1865                                   | 9                                       | 9                            | Six appointed by governor, and<br>three upon nomination of alumni  | 3                       |
| <i>Vassar College<br/>Board of Trustees</i>   | 1861                                   | 21                                      | 20                           | Self-perpetuating, fifteen in groups<br>of three in odd years  | 10                      |
|   |  |   |                              | Five on nomination of alumnae, one<br>each year  | 5                       |
| <i>Wisconsin, University of*<br/>Regents of the Uni-<br/>versity</i>  | 1848                                   | 17                                      | 15                           | By governor — one from each of<br>eleven congressional districts,<br>four from state at large  | 6                       |

\*The University also has a board of 12 visitors — 4 appointed

TABLE I. TYPES OF BOARDS OF CONTROL (CONTINUED)

| COMPOSITION OF MEMBERSHIP  |                    |  |                               |
|--|--------------------|--|-------------------------------|
| Appointed or Elected Members   | Ex Officio Members |  |                               |
| <i>Special Requirements</i>  | <i>Number</i>      | <i>Official Positions</i>  | <i>Voting Power</i>           |
| One member from each of the ten congressional districts; and one additional member from district in which university is located  | 2                  | Governor (ex officio president of board) and state superintendent of education   | Yes                           |
| No professor, tutor, or other assistant officer shall be a trustee   |                    | President usually elected a trustee  | No                            |
| A majority may not be of any one religious sect or of no religious sect  | 8                  | Governor, lieutenant governor, speaker of assembly, commissioner of education, commissioner of agriculture, president of state agricultural society, president of university, librarian of Cornell library | Yes                           |
|  |                    |  |                               |
|  | 2                  | President and treasurer  | Yes                           |
|  | 2                  | Governor and superintendent of public instruction  | Yes                           |
| Not more than one from any county, excepting that two may be from county in which university is situated   |                    |  |                               |
|  | 4                  | Governor, chief justice of supreme court, state commissioner of education, president of institute  | Yes                           |
| Majority of board to be members of the Methodist Episcopal Church  |                    |  |                               |
| Two of governor's appointments to be from representatives of agriculture, two of manufacturing industries, one trustee to be a woman, one alumni nominee to be a graduate of the school of agriculture |                    |  |                               |
|  | 1                  | President of the college   | Yes                           |
| Two of the members at large to be farmers and two from manual trades, at least two women   | 2                  | President of university and superintendent of public instruction   | President in case of tie vote |

by the regents, 4 by the alumni, and 4 by the governor.

shall be elected one member of such board, who shall hold his office for six years from the first day of July following his election. The state board of education shall have general supervision of the state normal college and the state normal schools, and the duties of said board shall be prescribed by law.

7. There shall be elected on the first Monday in April, 1909, a state board of agriculture to consist of six members, two of whom shall hold office for two years, two for four years and two for six years. At every regular biennial spring election thereafter, there shall be elected two members whose term of office shall be six years. The members thus elected and their successors in office shall be a body corporate to be known as "The State Board of Agriculture."

8. The state board of agriculture shall, as often as necessary, elect a president of the agricultural college, who shall be ex officio a member of the board, with the privilege of speaking but not of voting. He shall preside at the meetings of the board and be the principal executive officer of the college. The board shall have the general supervision of the college, and the direction and control of all agricultural funds; and shall perform such other duties as may be prescribed by law.

A characteristic and concise legal definition of the powers and duties of the board of control of a state institution is in the following:

... and they shall take in charge, have, hold, possess, and manage, all and singular, the property and moneys comprehended in said donations, as also the fund derived from the sale of the land scrip donated under said acts of congress, and the increase thereof, and all moneys or other property which may hereafter at any time be donated to and for the use of said institution. They shall also have power to organize said university in conformity with the purposes set forth in said acts of congress, holding their meetings at such times and places as they may agree on, a majority of their number constituting a quorum. They shall provide a seal; have power to elect all professors and teachers, removable at their pleasure; fix and regulate compensations; do all acts necessary and expedient to put and keep said university in operation; and make all bylaws, rules and regulations required or proper to conduct and manage the same.<sup>20</sup>

Important and fundamental as such legal prescriptions are, still more important and more fundamental is the spirit by which the word of the law is interpreted and applied. This spirit is to be discovered in the actual procedure of the board and the personality of its membership.

#### THE LEGAL VERSUS THE REAL BOARD OF CONTROL

Neither the legal constitution of the controlling agency nor the formal definition of its powers and duties gives any guarantee of the performance of those functions which are at once the primary motive and the final justification of academic government. The effective

<sup>20</sup> Consult Indiana Statutes, 1869, concerning the powers and duties of the trustees of Purdue University.

operation of a board of control is conditioned chiefly by the quality of its personnel.

The consensus of the best experience and judgment is that a board having from seven to fifteen members, selected for definitive and relatively long terms (ten years), and subject to a process of slow but gradual replacement, has the most favorable chance to become an effective instrumentality for the conduct of the distinctive business belonging to the directorate of the higher institutions of learning. When thus constituted the board will not be so small as to permit easy personal or clique domination, or so large as to promote individual irresponsibility.

In recent years there has been much discussion of the questions of the best size and the best method of securing a rightly qualified membership of the boards of control for higher institutions. While most of this argument, for obvious reasons, has taken place with reference to state universities and colleges, much of it has application to the institutions not under direct state control.

After all has been presented and argued, it may be safely asserted that a wholly dependable legal formula for constituting these boards has not yet been written. Theoretically, and upon the assumption that the original structure was of the right nature, coöptated boards would seem to possess the best chance to preserve and to re-create themselves. Practical experience, however, shows conclusively that self-perpetuating boards are exposed to the risks of becoming devitalized through active and inactive conservatism which comes through social and class inbreeding. Too frequently the trusteeship is regarded by the institution and the individual as one of the purely ornamental features of the academic organization.

The method by which members for boards of control for state higher institutions are selected is of growing public moment. The choice lies between appointment and election. Existing professional opinion is in favor of the appointment of members by the governor of the state and confirmation by the upper branch of the legislature, as against popular election.<sup>21</sup>

No formula for the organization of boards of control will solve the governmental problem of higher educational institutions which does not attach a maximum value to the personality of the individual mem-

<sup>21</sup> It is the author's strong personal judgment that neither appointment by the governor nor popular election affords a positive guarantee that the best-qualified citizens will be made available for service. The outstanding illustrations of pernicious political interference with state colleges and universities in recent years have arisen in those states where the governor had power of appointment of boards of control.

ber. Only forceful and forward-looking persons, representative of the best of the dynamic citizenship of their generation, should be eligible for membership,—men and women who are recognized successes in their own fields of activity, who comprehend the meaning of other kinds of success than their own, who are not mastered by any narrow partisan group or by any political party, who are capable of regarding their trusteeship as of the highest order of civic service, and, above all, who are able and willing to give freely an amount of time sufficient to enable them to know and to understand the immediate activities and the ultimate aspirations of the institutions of which they are a part. These qualities are required to give constructive reality to the ideals of college and university government.

#### THE INTERNAL ORGANIZATION

Ordinarily the board of control is authorized to choose its own officers. In many important instances charters and statutes provide for ex officio officers; for instance, at Harvard, Yale, Cornell, Michigan, etc., the president of the institution is also the chairman of the corporation or board. In a number of states the governor, when a member of the board, is also its chairman. Other officers, such as secretary, bursar, and treasurer, are sometimes, though not usually, chosen from the membership of the board. It may be laid down as a sound rule for organization that a board should have the authority to choose its own presiding officers and such other officers as are necessary for the internal operation of the board.

It is the general practice of all such boards to carry on their work through standing committees. No one has yet carefully studied this important element in academic government. There is no doubt that the prevailing committee system of boards of control has a pronounced influence on the general effectiveness of a board as a working agency and on the welfare and progress of the institution. Such a study needs to be made, for there are ample grounds for the conviction that, by and large, boards of control of our higher institutions have a tendency to be over-committed.

The division of the work of oversight and policy-making into many fragments, each assigned to the special care of a committee, is provocative of two of the weaknesses of boards of control as at present organized. In the first place, the board ceases to function consistently as a whole, with the inevitable result that too great reliance comes to be placed upon a small section of the membership of the board. Secondly, industrious and ambitious committees are often responsible for the

failure of many boards of control to observe the all-important difference between those things which belong to government and those which fall in the province of administration.

Without regard to special circumstances, and aside from the always necessary executive committee of such a board, existing to expedite the transaction of necessary business of the board between regular meetings and to solve the ever-present emergency, it may be said that there is rarely reason for more than four permanent committees,—on finance, on physical plant, on educational policy, and on faculty and student relations. The plan followed in many institutions, by which the board of control becomes divided into committees organized in the interest of schools and departments, is inimical to institutional unity and to sound administration in general.

Generally speaking, these boards meet too infrequently to permit their membership to fulfill their complete responsibilities. Too large a proportion of time and energy is given to routine, and too small a proportion to considering the results of the work of the institution.

#### THE BOARD OF CONTROL AT WORK

As intimated in the previous paragraphs, the real responsibilities of the board of control are not described by the bare phraseology of charters and statutes. Whenever these have been submitted to judicial test, the courts have generally held that "the management of a university rests in the sound discretion of its board of trustees." The underlying obligations of "sound discretion" are not easily found in or separated from the formal actions and material activities which are themselves so apt to counterfeit the essentials of real government and administration.<sup>22</sup> It is highly important, therefore, that there be recognized, if possible, some practical principles which may serve for the guidance of the board of control genuinely desirous of fulfilling its obligations as an agency for government, rather than as a means for administration. A conventional formulation of such "principles" reads thus:<sup>23</sup>

The scope of the board's activities should be strictly limited either by law or by board ruling to the three general functions: the determination of the general policies of the institution or institutions under its control, in consulta-

<sup>22</sup> N. M. Butler. *Annual Report of the President of Columbia University for 1916-1917*, pp. 41-45 (Government and Administration); also in his "Scholarship and Service," pp. 163 ff. Charles Scribner's Sons, 1921.

<sup>23</sup> S. P. Capen and E. B. Stevens. Report of a Survey of the University of Nevada. *United States Bureau of Education Bulletin No. 19*, 1917. See particularly pages 24 ff.

tion with the executive officers; the appropriation of moneys or the approval of the distribution of appropriations made by public appropriating bodies; and the appointment of institutional employees on the recommendation of the institutional executives.

It is at once apparent to the practical minded that the critical and deep-seated difficulty of such principles lies in their application. Immediately such questions as these arise: How shall the dividing line between general policy and administrative details or decisions be drawn? Where are the proper limits of the authority of the board in the control of expenditures and in the making and unmaking of appointments? The power to pay carries with it the power to prescribe and proscribe. Indeed, it is a wise board of control that knows and recognizes its own policies.

With a full recognition of their limitations, and in the interests of a concrete brevity, the following list of the inescapable obligations of the competent board of control is presented:

1. The selection of the president and, upon his recommendation, the other principal executive officers of the institution.
2. The firm guidance and sympathetic support of the president and executive officers in all institutional matters.
3. The devising of ways and means for raising adequate funds with which to provide and to secure a well-balanced support for the educational and scientific program of the institution.
4. The preparation of a comprehensive plan for the future physical development of the institution, and the utilization of only a proper proportion of the resources of the institution for such development.
5. The requirement of regular, concise, and intelligent financial and educational reports from officers and departments, which will enable a ready understanding of the results of the operation of the institution.
6. The service of individual members as agents for effective contact with the public and consequently a better understanding and sounder confidence in the work of the institution.
7. The understanding of the educational aims and goals of the institution as formulated by the faculty.
8. The approving of an annual budget which protects the institution from debilitating deficits. The budget should represent that business acumen and foresight which are among the principal constructive contributions of the board of control.
9. The formulation, in clear terms, of the fundamental duties of the faculty, and the recognition of the right and the responsibility of the faculty to organize itself for the proper performance of the designated duties.



10. The creation of proper mechanisms whereby the board may be brought into coöperative relations with the faculty and the organized student body.

A development of the signal influence in the organization and control in higher institutions has taken place during the past decade. This development may be said to have begun with the formation of the American Association of University Professors in 1915. Originally representing a remonstrance to the alleged arbitrary and unjust actions of boards of control and presidents of institutions, especially where the question of so-called academic freedom was involved, this movement has come to be a revival of the scholastic guild spirit so potent in educational affairs during the Middle Ages.<sup>24</sup>

The motivating force of the existing country-wide movement has been the argument that the teachers and scholars are the only real representatives of the profession of education; and therefore should not be excluded from the determination of the policies and the administration of the institution, of which they are the major part.<sup>25</sup>

It is contended that the lay boards of trustees should delegate to the professional faculties and their chosen representatives more or less authority over staff appointments, promotions, dismissals, allotment of institutional funds, and other fundamental affairs of institutional operation. In particular it is maintained that the presidential office should be shorn of its present large powers and prestige.<sup>26</sup>

It is too soon to make a correct measure of the permanent worth of this movement. Without question it has already resulted in establishing clearer and more harmonious relations between the faculties and boards of control, and it is conceivable that it may bring into the membership of boards of control chosen representatives of the faculties following the plan instituted at Cornell University.

<sup>24</sup> The university was originally a scholastic guild — whether of masters or students. — Hastings Rashdall. *Universities of Europe in the Middle Ages*, 1: 17. Clarendon Press, 1895.

<sup>25</sup> The principal brief in the case is J. M. Cattell's "University Control" (Science Press, 1913). The bulletins issued by the American Association of University Professors since 1915 constitute a vade mecum of this movement and its steady development.

<sup>26</sup> The merits of the practical situation are clearly presented in the following references:

W. R. Smith. The Principles underlying the Relations between Faculty and Administrative Officers in College and University Control. *National Education Association. Addresses and Proceedings*, 1922: 887-896.

J. A. Leighton. Advantages involved in Extending the Scope of Faculty Participation. *National Education Association. Addresses and Proceedings*, 1922: 896-903.

## SUPPLEMENTARY AND COÖPERATIVE AGENCIES FOR CONTROL

We have seen that the typical form of control for American higher institutions is that of a single authoritative board. Even so, it is easily possible to observe, from the earliest colonial beginnings down to the present, two movements which have tended to modify in various ways the actual practices of controlling boards, and, it may be added, to extend the area of the marginal influence of these boards.

The first of these movements may be described as that of maintaining and emphasizing the *public* nature of the institutions even when created as private corporations. Had the prevailing conception of higher education been different from what it then was, a number of the important early institutions — Harvard, Yale, Columbia, Dartmouth, Pennsylvania, William and Mary, etc.— might easily have developed into state universities as that term is now used. When, however, it was established that charter rights were not subject to legislative invasion or control, it may be said that the *striving for institutional independence ceased and the task of avoiding institutional isolation began*. And this task has continued in a variety of ways in different classes of institutions. The tendency to grant to organized alumni the right of selecting or of nominating members of the board of control has been a widespread manifestation of this movement. While in many instances the plan of alumni representation on coöpted boards of control has largely failed to give positive reality of alumni influence, this tendency is to be reckoned with in the form and functions of boards of control of the future.

The second movement is that tending toward a *dual* form of control. As was pointed out in the preceding historical section, the dual form of control, represented by the corporation and overseers of Harvard, is distinctive. Nevertheless there are to be found in higher institutions in all parts of the country illustrations of what in substance and effect are a partial dual or coöperative control.

Characteristic examples of such supplementary and coöperative agencies of control are to be seen in the following:

In 1913 the regents of the University of Wisconsin created a board of visitors to consist of twelve persons, four of whom were to be nominated by the governor, four by the alumni association of the university, and four by the regents. At least one of each of these groups was to be a woman. Appointments were for terms of four years.

It is the duty of the members of this board of visitors to render assistance in the development of the efficiency of the university, and they are authorized to examine generally the work of the institution, the

condition, methods, manner, and subjects of instruction in the various schools, colleges, divisions, and departments, the condition of buildings and grounds, and any other matter relative to the welfare of the university and its faculty and students. Provision is made for the submission of regular reports to the board of regents and also for at least one regular joint meeting of the regents and the visitors.

The Board of Trustees of the University of Illinois has established from time to time certain advisory boards or committees of citizens of the state, whose function it is to advise the respective departments on questions which may be referred by the departments to the boards. Eleven such advisory boards are in existence at the present time (1927).

Under the statutes of Indiana an advisory committee of six persons is created to advise with the director of the agricultural experiment station of Purdue University regarding the carrying out of the provisions of the laws relating to the work and funds of this station. This committee is composed of six persons, one person being appointed by each of the following organizations: the Indiana Federation of Farmers' Associations, the State Corn Growers' Association, the State Dairy Association, the State Livestock Breeders' Association, the State Horticultural Society, and the State Poultry Association.

Another influence tending to modify the scope of the authority of boards of control, especially in the cosmopolitan type of university, comes from the absorption of other institutions within the university and from schemes of affiliation with other educational and scientific institutions. Illustrations of this are too numerous and too well known to need further mention.

#### CENTRAL CONTROL AND SUPERCONTROL OF HIGHER INSTITUTIONS

The course of development of the government of public education in the United States is marked by a continued increase in the amount of direct state control.<sup>27</sup> This movement for state centralization has vitally affected the place and powers of the boards of control for state higher institutions. Indeed, it may be said that no other movement possesses such far-reaching possibilities for radical changes in long-established policies of educational government and administration. The record of recent years contains many illustrations not only of the subordination of institutional boards but, in some instances, of their complete elimination. There is scarcely a state in the Union today in which some centralizing experiments with educational institutions are not being attempted.

<sup>27</sup> E. P. Cubberley. *State School Administration*. (Chapters 11 and 13, especially, contain an excellent presentation.) Houghton Mifflin Company, 1927.

The centralization movement has naturally assumed different forms in different states. Furthermore, the objectives of such reconstruction have varied widely,—all the way from a genuine desire for greater efficiency, or the necessity for reform, to motives arising from sheer political opportunism. As might be expected, a large amount of centralizing legislation has taken place in those states having decentralized types of organizations for their higher institutions. The general adoption of a budget basis for state appropriations has served to bring the financial administration of all state institutions more and more under the oversight and control of general state administrative officers. The establishment of state purchasing and building departments, and the creation of systems of direct state supervision of the expenditures of all public funds, have brought about many new limitations to the power of institutional boards of control.

The character of this centralizing tendency may be represented by three typical cases.<sup>28</sup>

In the case of Kansas a most interesting and illuminating cycle of changes has taken place. Here the state university and the state agricultural college had their respective boards of regents from the day of their establishment down to 1913. The university board was composed of six regents, with one honorary member. The agricultural college board consisted of seven members. A single board of regents composed of six regular members and three honorary members had the oversight of the three state normal schools. In 1913 the state legislature abolished these three boards, together with several other boards having charge of the charitable, penal, and correctional institutions. In their places were created three other boards:

1. A state board of administration, to have charge of the university, the agricultural college, the normal schools, and the school of mines, the school for the deaf, and the school for the blind;

2. The state board of corrections, to have charge of all penal and correctional institutions; and

3. The state board of control, to have charge of all charitable and eleemosynary institutions.

<sup>28</sup> H. S. Pritchett. *Politics and Education in Iowa. Carnegie Foundation for the Advancement of Teaching. Annual Report, 1913*: 78-98.

H. S. Pritchett. *State Regulation of Higher Education. Carnegie Foundation for the Advancement of Teaching. Annual Report, 1913*: 67-77.

C. R. Van Hise. *Central Boards of Control. National Association of State Universities. Transactions and Proceedings, 9*: 62-104, 1911.

George F. Zook and Others. *Report of a Survey of the State Institutions of Higher Learning in Kansas. United States Bureau of Education Bulletin No. 40, 1923*; also in *School and Society, 18*: 683-684, December 8, 1923. This has a good summary of centralizing legislation influencing state higher institutions.

At the same time a centralized business office was set up for all the higher institutions under the control of the Board of Administration, and an effort was made to coöperate with the other state boards in the purchase of supplies and equipment.

Four years later (1917) this triple-board plan was replaced by a further centralizing device. This took the form of a single Board of Administration, made up of four paid members, including the governor, to have charge of all the institutions of the state.

In direct consequence of the arbitrary dismissal of the Chancellor of the University<sup>29</sup> by the state board of administration the legislature of 1925 established a single board of regents for the state university, the state agricultural college, and the several normal schools, now known as teachers' colleges. This board is composed of nine members appointed by the governor. The act creating this board contains the following significant provision :

The act of 1925, establishing the board of regents for higher institutions reserves the power of the business manager, provided for in act of 1917, creating the state board of administration.

The power of the business manager referred to above is defined in the following paragraph of the statute of 1917 :

76-107. This act contemplates among other things the employment of an expert business manager for the business and scientific management of the state institutions covered by this act, and also for the placing of all educational, benevolent and penal institutions of the State of Kansas under one management and under one board of trustees or directors with a suitable place of business at the State Capitol, for the orderly and economical administration thereof, publicity and fairness in the awarding of contracts for all supplies, the keeping of such books, records, accounts and reports as shall show, not only the cost of maintaining each of said institutions but the per capita cost of maintaining the inmates thereof and this act shall be liberally construed so as to carry out such purposes (L. 1917, Ch. 297).

The state of Montana represents a case wherein the control of all state higher institutions is unified under a single state board of education. Each of the six geographically separated institutions has a small local board with limited powers and its own executive head. All institutions, however, are integral units of the legal organization known as the University of Montana.

By the provisions of the Montana state constitution, adopted in 1889, the general control and supervision of the state university and

<sup>29</sup> Consult *Lindley v. State Board of Administration*, 117 Kansas 558, for the court record of this incident.

various other state educational institutions was vested in a state board of education<sup>30</sup> consisting of eleven members, the governor, the state superintendent of public instruction, and the attorney general being members *ex officio*. The other members are appointed by the governor, subject to confirmation by the state senate.

In 1893 four state higher institutions were established in different cities, — the state university, the state college of agriculture and mechanic arts, the state school of mines, and the state normal college. For each of these institutions there was set up a special executive board consisting of the president of the institution, *ex officio*, and two members appointed by the governor, with the approval of the state board of education. These local boards had such immediate direction and control (other than financial) of the affairs of the institutions as was conferred by the state board of education.

In 1913, in consequence of many years of competition and controversy among the institutions, the legislature sought to unify and harmonize the state system of higher education by creating an administrative organization of the University of Montana, to include all the higher institutions of the state.<sup>31</sup> As provided by the constitution, the state board of education was to be the governing board of the new organization. The distinctive feature of the new act was the creation of the office of Chancellor of the University, whose powers and duties, within the limits of the state law, were to be prescribed by the board of education.

This law of 1913 further stipulated that it should be the specific duty of the state board of education to take such steps and prescribe such rules as might be necessary to prevent unnecessary duplication of courses of instruction in the various educational institutions composing the University of Montana; to investigate carefully the needs of each of the state institutions with reference to buildings, equipment, and instruction; to estimate the necessary appropriations required for such needs and to make recommendations to the legislative assembly accordingly.

In 1918 the state board of education defined in the following by-law the powers and duties of the Chancellor of the University. This is presented in full, inasmuch as it represents the characteristic relation existing between a board of control and its chief executive officer.

<sup>30</sup> This board also has the oversight of the state schools for dependent, delinquent, and defective children, and certain powers over other parts of the public school system.

<sup>31</sup> This form of organization is based upon a conception of institutional government similar to that found in the University of Georgia from the time of its establishment.

*Relation of the Chancellor to the State Board of Education.* The Chancellor is the chief executive officer of the University, and as such performs the duties prescribed by law, and carries out the orders of the Board. He is responsible to the Board for the prompt and effective execution of all policies determined upon for the proper enforcement of the rules and regulations adopted for the several institutions of the University. He shall attend and participate in all meetings of the Board at which matters relating to his office, or to any of the institutions or affairs of the University are under consideration. He shall make nominations and reports of appointments, promotions, salaries, transfers, suspensions, dismissals, and resignations of administrative officers, members of the instructional and scientific staffs, and other employees of the several institutions of the University. As prescribed by law, he shall sign all diplomas, degrees, papers, instruments, and documents executed by the University. It is also his duty to report to the Board, at reasonable intervals, on the general condition of the University and to make recommendations concerning general policies that will promote the development of the higher educational system of the state.

*Relation of the Chancellor to the University.* The Chancellor is a member of all legislative bodies within the University organization; and decides all questions of jurisdiction, not specifically defined, of the several councils, faculties, and officers. He may refer any question of institutional or general University policy to any council, faculty, committee, or to any member of the instructional or scientific staffs for investigation and report. He may call special meetings of any council, faculty, or committee at any time. The Chancellor shall afford every opportunity, consistent with sound administration and educational policy, to every officer and member of the instructional and scientific staffs to present suggestions for the general welfare of the University or of any of its institutions.

*The Veto of the Chancellor.* The Chancellor may veto any act of any council, faculty, or committee within the University, but in so doing he shall transmit with the veto a written statement of the reasons for such action. A copy of each veto statement shall be transmitted to the Board. Any council, faculty, or committee may appeal from a veto of the Chancellor to the Board and may be represented before the Board by one of its members chosen for this purpose.

*General Powers and Duties of the Chancellor.* The Chancellor shall prepare and submit to the Board such annual and special reports concerning the University as the Board may require. He shall also prepare and present annually to the Board the University budget. When approved by the Board, this budget shall govern all expenditures, subject to the provisions of the law and to the regulations of the State Board of Examiners.

*Incidental Powers of the Chancellor.* As the chief executive officer of the University, the Chancellor is especially charged with the duty of securing harmony and coöperation among the institutions of the University, and the economical coördination of their instructional and scientific work. To these ends he has such powers as may be definitely delegated to him by the Board; and in addition such incidental powers as are necessary properly to perform the duties of his office.

The constitution of the state provides that a board of examiners composed of the governor, the secretary of state, and the attorney-general

shall constitute a board of examiners with power to examine all financial claims against the state except salaries fixed by law. Under this provision and by subsequent legislation this board has had supervision and control of the expenditure of all money appropriated by the legislature for the use of the higher institutions. In 1921 additional laws provided that the budgets for all appropriations should be submitted through the state board of examiners, and that there should be established subordinate to this board a central purchasing department in charge of a state purchasing agent appointed by the governor. The purchasing agent had full authority under the board of examiners to purchase all supplies of any nature for all departments and institutions in the state.

Another type of centralization is that brought about by the so-called boards of higher curricula which are to be found in certain states, and represent a variety of compulsory coöperation.<sup>32</sup> That of Oregon is representative. In 1909 the legislature directed the governor to appoint, for terms of five years each, a non-paid board of five members, called the Board of Higher Curricula.

The law provided that :

The exclusive purpose and object of the board of higher curricula shall be to determine what courses of studies or departments, if any, shall not be duplicated in the higher educational institutions of Oregon, and to determine and define the courses of study and departments to be offered and conducted by each such institution.

In another section occurs the statement :

It is hereby made the duty of the board of higher curricula to visit the higher educational institutions, for the purpose of inquiring as to the work offered and conducted at such institutions, whenever and as often as it may deem necessary, and to specifically determine from time to time as occasion may require what courses or departments, if any, shall not, in their judgment, be duplicated in the several higher educational institutions and may direct the elimination of duplicated work from any institution, and to determine and define the courses of study and departments to be offered and conducted by each institution.

In the Oregon plan there were three separate boards of regents, one for the university, one for the college of agriculture and mechanic arts, and one for the several normal schools. In 1929 a legislative act provided for the consolidation of the government of the higher educational institutions through a single State Board of Higher Education composed of nine members appointed by the governor.

<sup>32</sup> R. J. Leonard. *The Coördination of State Institutions for Higher Education through Supplementary Curricular Boards*. Bureau of Research Studies No. 13, University of California, 1923. (Contains a study of the working of such boards in Alabama, Oregon, and Washington.)



While it is obvious that the centralizing tendency for the control of state higher institutions has not directly affected nonstate institutions, nevertheless several agencies have operated to impose upon the institutions outside of state control influences and powers which in effect have constituted a kind of extralegal supercontrol. Among these may be mentioned the Federal government, through the administration of the provisions of the Morrill Act of 1862, and acts supplementary thereto; the great educational foundations of the country, such as the Carnegie Foundation for the Advancement of Teaching and the General Education Board; the various accrediting agencies such as the North Central Association of Colleges and Secondary Schools; and the national organizations representing the professions of law, medicine, pharmacy, etc.

### THE PROSPECT

The increasing importance which in recent years has come to be attached to boards of control, a factor determinant of the nature and effectiveness of higher institutions, has raised new fundamental questions relative to the personnel and the functions of such boards. In reality the majority of such questions are not new. They do, however, give a modern significance to the age-old issue of the necessity for the preservation of the freedom and integrity of the school, — especially that school called the university or the college, — and for organizing and governing this school so as to render it immune to all those influences by which such an institution is delimited or wholly deprived of its power to serve efficiently the unselfish ends of education in and for a democracy.<sup>33</sup>

Today we are witnessing, and tomorrow we shall continue to witness, the contest that is always going on in human affairs, — the contest between inherited traditions that crave peace and the restless insurgency that compels progress. Nevertheless this generation is gradu-

<sup>33</sup> Examples of a literature of protest are to be found in the following. These, while not exhibiting scientific balance, and in many instances displaying a lack of essential information, are symptomatic of an attitude toward the present type of institutional government which may not be entirely disregarded. The careful reading of these will be found worth while by the unbiased student.

J. E. Kirkpatrick. *The American College and its Rulers*. New Republic, Inc., 1926.

Lucien Price. *Prophets Unawares: the Romance of an Idea*. The Century Co. 1924.

Upton Sinclair. *The Goose-Step: a Study of American Education*. Published by the author, 1923.

Thorstein B. Veblen. *The Higher Learning in America: a Memorandum on the Conduct of Universities by Business Men*. B. W. Huebsch, 1918.

ally learning that there is a vital and enduring relation between what the board of institutional control is and what the institution itself is and can become. The institutions embody the ideals of a society. The board of control must function as a means for the realization of those ideals, or the board itself must disappear. If modern society can be said to hold a mortgage on the abilities of educated men, then it can also be said to hold a similar claim on the civic capacities of those selected to build that men may be educated.

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## CHAPTER XXI

### THE COLLEGE OR UNIVERSITY BUDGET

By FREDERICK J. KELLY, President of the University of Idaho

The president of a college or university spends a good deal of his time listening to urgent pleas by deans or other members of the staff for more teachers, more equipment, better facilities, and the like. The great majority of such requests are entirely legitimate and if granted would increase the efficiency of the institution. Because of lack of funds the president, or the board of trustees behind him, is called upon to deny many of these pleas. Any office device whereby he may determine most wisely which pleas to grant and which to deny are genuine aids to education. The college budget is one such device.

Since colleges and universities range in size all the way from a few hundred students to fifteen thousand, and from expenditures of \$50,000 a year to \$6,000,000, any discussion of a device such as the budget must be in most general terms if the discussion is expected to be applicable to all this range of colleges and universities. The basic principles underlying the making and the using of a budget are essentially the same, however, for all types of colleges. The application of those principles to the several types of institutions will vary widely, and only a few of such applications can be pointed out in this chapter.

#### DEFINITION OF A BUDGET

A college or university budget is an itemized statement of prospective income and expenditures for a period, usually a year. The income is frequently estimated, and from some sources more or less roughly. On the basis of the estimated income, allotments of proposed expenditures are then made, itemized in such detail as seems most useful. The items include at least the salaries of the teachers, the amount allocated for supplies, equipment, books, and the like, the estimated cost of heat, light, power, and the like, permanent equipment, building upkeep, and new construction. Such a typewritten or printed statement of prospective income and expenditures then becomes the guide for the financial activities during the period covered.

No extensive argument is needed to justify a budget method in colleges and universities. Governments and corporations, as well as individuals, have found that such a means of controlling expenditures is absolutely essential. Educational institutions need such control even more because the amount of money available is almost never equal to what those in charge of the institution believe could be spent with wisdom for the improvement of the educational service. Many colleges have experienced great embarrassment because they yielded to the temptation of incurring obligations beyond their incomes. Unless the policy of keeping expenditures within income is rigidly adhered to in educational institutions, financial chaos follows, exactly as it follows in government or in industry.

No effort will be made to discuss the various alternatives encountered in examining budget procedures in different colleges. These alternatives and the chief arguments in their support may be found in the three publications cited at the close of this chapter. It seems more useful to devote this chapter to the type of budget procedure which appears to the author most acceptable.

### RESPONSIBILITY FOR MAKING THE BUDGET

The mistake is sometimes made of regarding the preparation of the college budget as a function of the finance office. There is no aspect of university administration that is more distinctly educational and that should be in the control of educational officers more surely than the making of the college budget. The financial office of the college should render great assistance in assembling the necessary information and in devising the best procedures by which the college budget can be made. On the other hand, the whole educational policy of the college or university, both in general and in detail, is reflected in the university budget. The relative emphasis upon one department as against another must show up in the budget. The extent to which any given activity can be carried on is, in the last analysis, a budget matter. In short, there is no more effective way of charting the educational policy of the college or university than in the making of a budget. Shall the ratio of high-salaried men to low-salaried men be large or small? Shall research be encouraged or shall the time of instructors be absorbed with heavy loads of teaching? Shall clerical and stenographic assistance be sparingly or generously provided? Shall buildings be kept in thorough repair? And so on through all the questions of college or university policy. Answers can be found most clearly written in the college or university budget. It cannot be too strongly emphasized,

therefore, that the making of the budget and the decisions as to amounts in all the items are educational questions to be decided by educational officers and not financial questions to be decided by financial officers.

#### THE RELATION BETWEEN THE BUDGET AND THE ANNUAL FINANCIAL STATEMENT OF THE INSTITUTION

While the budget must, in the nature of the case, be an estimate, as to both income and expenditures, it should be based upon the past experiences of the institution. To make this comparison easy, the financial statement, the annual financial report of the institution, and the budget must have the same general headings under which income and expenditures are reported. This makes it possible to compare items while making the budget and at any time after the year covered by the budget has been completed, to observe how accurate the estimates have been. The practice is very useful of inserting on one or more of the official budget copies which are preserved for reference the actual amount of income in each item, and the actual amount of expenditures for each item in columns parallel with the estimates which had been previously made. Thus it is easy to go back over the preceding years and discover (1) how reliable the estimates were, (2) how regular from year to year income from the several items has been, (3) what the trend is, whether of increase or of decrease, in connection with each item of income and with each item of expenditure. Even when all this information is at hand, experience has shown the wisdom of a policy of genuine conservatism with reference to estimates of prospective income. To substitute optimism and hope for real evidence in making up the income summary for the budget of an educational institution is the poorest kind of educational statesmanship.

#### CLASSIFICATION OF ITEMS IN THE INCOME BUDGET

The two major divisions in the income budget are (1) income unrestricted as to use, and (2) income restricted as to use. Under each of these large categories fall many sources of income which can best be illustrated by the following typical classification:

1. Income unrestricted as to use
  - a. From appropriations by the state or municipality
  - b. From endowment investments
    - (1) The Jones fund
    - (2) The Smith fund
    - (3) The Roberts fund





Because many of the items of the income budget are estimates rather than fixed sums, the income budget should be approved by the final budget authority, presumably the trustees, before work is undertaken on the budget of expenditures. When thus approved, the income budget becomes the working basis for making out the budget of expenditures.

### THE FORM OF THE EXPENDITURES BUDGET

The plan of arranging the items of the budget of expenditures is determined by four factors :

1. It is necessary to keep each subdivision of the budget, as well as the total, within the estimated income. Opposite each item of proposed expenditure should be shown the source of income from which the expenditure is to be paid. By checking through the budget it will thus be possible to see that no source of income is overdrawn, and what balances, if any, remain in the several income funds.

2. Officers within the institution need to be able to plan ahead. If a given department desires to establish a new professorship, it is necessary that assurance be had in the budget that money will be available for that professorship. If a new desk is desired, the budget must indicate that there is money with which to buy it. Therefore the expenditures budget must contain such classifications as make it possible for department heads and deans, superintendents of buildings, and the like to make definite plans for their year's work.

3. The third factor which conditions the form of the expenditures budget is the necessity of having some means whereby requisitions and pay rolls may be checked as they come in from time to time throughout the year covered by the budget. When once the salary lists and other expense items have been approved in the budget, pay checks may be drawn and vouchers issued in routine fashion covering these items. Items which appear on the pay rolls or on requisitions and are not provided for in the budget cannot be approved in routine fashion by the financial officers of the institution.

4. The fourth factor conditioning the form of the expenditures budget is the necessity of pooling the resources available for certain items in order to avoid the effect of frozen assets. For example, the amount needed for departmental supplies does and rightly should vary from year to year in a given department. If a given sum is set aside annually for each department or other small unit of the institution, then either of two things happens : first, it proves to be too much from year to year on the average ; or, second, it proves not to be enough for certain years when extraordinary needs arise. Therefore, if only a very

minimum is set aside definitely for each department, and then the remainder is pooled in a common supplies budget which may be drawn upon by any department in the pool, with the approval of the officer in charge of the pool, considerable economies can always be effected. The same thing is true in the purchase of library books, scientific apparatus, and the like. There should therefore be a certain reserve kept for such purposes as these, with only a minimum assigned in the budget to each department. Expenditures from the reserve should of course be made only on approval of the officer or committee charged with allotting amounts from it.

With these four factors in mind, — namely, keeping expenditures within the income, permitting officers of the institution to plan their expenditures definitely ahead, providing for definite control of requisitions and pay rolls, and avoiding frozen assets, — consideration can now be given to the form of the expenditures budget and the procedure involved in making it.

The first step in making up the expenditures budget is to assign at least tentative allotments to the various larger units of the institution. This is necessary because the general policies of the institution are determined in the first instance by such allotments. For example, shall liberal arts be more generously supported or shall engineering be more generously supported? Have the buildings and the grounds been adequately kept up or is it essential to add to the expenditures for such purposes? In short, all the questions of general policy will relate in the first instance to allotments for the larger units. With (1) information at hand as to the expenditures for these units in previous years, and (2) figures compiled covering (*a*) unit costs, (*b*) the distribution of salaries of members of the staff in the various divisions, (*c*) tabulations of size of classes, and (*d*) teaching hours of members of the staff, these tentative allotments should be made to the larger units by the officers finally responsible for recommending the completed expenditures budget to the board of trustees. Such a general summary might comprise the following items:

SECTION 1. General reserve

SECTION 2. Special reserves and departmental allotments for

*a.* Books    *b.* Supplies    *c.* Equipment    *d.* Research etc.

SECTION 3. General administration

SECTION 4. College of Arts

SECTION 5. College of Engineering

SECTION 6. Graduate School

SECTION 7. Buildings and grounds (permanent repairs and improvements)

SECTION 8. Buildings and grounds (maintenance)

SECTION 9. New buildings

Of course, any particular divisions which the organization of a given institution calls for would be included in this general summary. The total of the general summary should be the total of the income summary from both the unrestricted sources of income and the restricted sources. The allotment from the unrestricted sources should be shown in one column and the allotment from restricted sources in another column for each of these large divisions.

When these tentative allotments to the large divisions of the institution have been decided upon, work may then proceed with the making of the detailed expenditures budget. This will finally appear in the form of departmental classifications under the sectional divisions indicated above. Under each department the individual items, such as individual salaries, will appear. For example, a given page of the budget might appear as follows:

## SECTION IV. COLLEGE OF ARTS

| DEPARTMENT A, ANTHROPOLOGY           | TOTAL<br>SALARY | UNRESTRICTED<br>INCOME | RESTRICTED<br>INCOME |
|--------------------------------------|-----------------|------------------------|----------------------|
| 1. Henry Jones    Professor    B     | 4500            | 2000                   | 2500 (16)            |
| 2. Arthur Smith   Instructor   B     | 2500            | 2500                   |                      |
| 3. Clara Moore    Clerk        A III | 1200            | 1200                   |                      |
| From Dept. N, Professor Brown        | 600             | 600                    |                      |
|                                      | 8800            | 6300                   | 2500                 |
| To Dept. K, Professor Jones          | 1000            | 1000                   |                      |
| Total pay roll                       | 7800            | 5300                   | 2500                 |

In the given sample budget page above the names and ranks are followed by a column indicating by code the term of employment (B, for academic year; A, for twelve months; III, for vacation allowance in weeks). Then appears the column for total annual salary. At the right, beyond the column for total salary, the first column is headed "Unrestricted Income"; the second, "Restricted Income." The second column should be wide enough to allow not only for the amount allotted to the item but also for a number indicating the income budget number in the restricted income budget from which the item draws. For example, Professor Henry Jones in the Department of Anthropology draws \$2000 from the unrestricted-income budget and \$2500 from the restricted-income budget No. 16, which is, say, the Jones Professorial Grant.

In order that the expenditures budget may be used to compile important data and also as a check in the hands of the pay-roll clerk,

the code column is necessary. In addition to the symbols used above, the column may well serve to show other necessary data, such as C for one employed on a special term contract, H 75 for one employed for 75 per cent of his time, etc.

In order that approximately accurate cost-accounting data may be assembled from the budget it is also necessary to indicate in some way on the departmental sheet such facts as these: Professor Jones in Anthropology is to devote part of his time to teaching in Department K, Sociology, and therefore there should be a certain amount, say \$1000, of his salary subtracted from the Anthropology budget and added to the Sociology budget. Similarly, Professor Brown from Department N, History, is to give \$600 worth of instruction to the Department of Anthropology, on the basis of which \$600 should be added to the total of the Anthropology budget. Of course, a corresponding addition of \$1000 will appear in the Sociology budget, and a subtraction of \$600 in the History budget. In short, all such facts as are essential to a clear understanding of where the money comes from and where it goes should be indicated on these departmental budget sheets.

While it is not uncommon to put the sum allotted to a given department for supplies, books, equipment, and research on the same page as the salaries for that department, a preferable practice is to organize the budget for these things as a separate unit. For example, the budget for supplies may well be arranged as follows:

#### SECTION 2, PART 2. SPECIAL RESERVES AND DEPARTMENTAL ALLOTMENTS FOR SUPPLIES

| BUDGET<br>NUMBER                                       | NAME OF UNIT                             | TOTAL<br>ALLOTMENT | UNRESTRICTED<br>INCOME | RESTRICTED<br>INCOME |
|--|--|--------------------|------------------------|----------------------|
| 100  | College of Arts reserve . . . . .        | \$5000             | \$5000                 |                      |
| 101  | Anthropology . . . . .                   | 500                | 100                    | \$400 (27)           |
| 102  | Astronomy . . . . .                      | 300                | 300                    |                      |
| So for other departments of the College of Arts        |  |                    |                        |                      |
| 200  | College of Engineering reserve . . . . . | 3000               | 3000                   |                      |
| 201  | Civil engineering . . . . .              | 700                | 700                    |                      |
| So for other departments of the College of Engineering |  |                    |                        |                      |

Then would follow all other units which have allotments for supplies.

The arrangement suggested above recognizes the principle of a reserve for a large unit like the College of Arts. This may be used to

meet special departmental needs which arise during the given year in any of the departments comprising the College of Arts. The amounts allotted to each department in the budget, say \$500 to Anthropology, are minimum yearly allotments and therefore need not be examined critically each year.

In the last column \$400 is shown to be allotted to Anthropology from Income Budget No. 27.

If the foregoing discussion has made clear the essentials of the form in which the budget should ultimately appear, attention may now be given to the question of the parts which the various officers of the college or university may properly play in preparing the budget for final approval by the governing board. What responsibility should be carried by the president? the deans? the heads of departments? faculty committees?

### COÖPERATIVE BUDGET MAKING

There is no categorical answer which can be given to this question. Experience differs widely among the colleges. In some institutions the president is almost solely responsible for each item. In other institutions deans and department heads have large responsibility within their units. In other institutions budget committees chosen from the faculty are charged with preparing the budget. It may be useful, therefore, to examine the principles which appear to apply.

To begin with, it must be clear that the final authority in matters pertaining to the budget rests with the governing board, which is charged by law with the responsibility of managing the institution. The purposes of the institution are conceived or at least approved by the board, and the policies which are adopted to accomplish those purposes will be clearly reflected in the budget. In fact, the budget is the means whereby the governing board maintains its control in carrying out its policies.

Similarly, it must be clear that all the officers who assist in the preparation of the budget for presentation to the governing board must be conversant with the purposes and policies of the institution as conceived by the board. Usually the president of the institution is appointed by the board as its educational leader, to assist in the formulation of the policies of the institution, and also as its executive officer, charged with administering the affairs of the institution in accord with the policies when once adopted. Faculty members must therefore regard their function in budget making as assisting the president rather than working independently of the president. The budget

must be presented to the board by the president as embodying his recommendations. Alternative proposals coming from faculty groups to the president may be presented to the board by the president if in his judgement the best interests of the institution are to be served thereby, but he cannot evade the responsibility of making definite recommendations if he is to be recognized as the educational leader of the institution.

In the capacity of advisers to the president those faculty members best acquainted with the policies of the institution, and most familiar with the details of its operation, should pool their experiences in the preparation of the budget. In general, the deans and the heads, or chairmen, of departments are the ones best qualified to speak for their respective units. They are brought daily into contact with situations which relate to the budget. Other members of the faculty rarely have as broad an outlook upon the problems and policies of the institution. If they are not competent to represent their units in budget deliberations, it is doubtful whether deans and heads of departments have been wisely chosen for their administrative posts.

As indicating how the deans and heads of divisions can function most adequately in advising the president on matters of the budget the practice in vogue in one state university of some four thousand students will be described. This practice was put into effect in 1921, replacing the typical procedure in which the department head recommended his budget to the dean and the dean made up his college budget from all these departmental recommendations and submitted it to the president. The state university in question comprises a graduate school, a college of arts and sciences, and schools of engineering, education, law, medicine, fine arts, and pharmacy. The college of arts and sciences enrolls more than half the students of the university, and in addition gives considerable instruction which is required in the curricula of the several professional schools.

Each departmental budget is considered by a committee consisting of the dean of administration, the head of the department under consideration, and the deans of all the schools which accept work in the given department for graduation. To illustrate, the budget for the department of chemistry comes up for consideration by a committee consisting of the dean of administration, the head of the department of chemistry, and the deans of the graduate school, the college of arts and sciences, the school of education, the school of engineering, the school of medicine, and the school of pharmacy. The budget of the department of Romance languages comes up for consideration before a committee consisting of the dean of administration, the dean of the

graduate school, the college of arts and sciences, the school of education, and the school of fine arts. The dean of administration is the one official having membership in all these committees. He serves as chairman of the committees.

The principal object of this arrangement is to bring together for common counsel all those who have a definite interest in seeing the work of the given department well done. The dean of the school of medicine and the dean of the school of pharmacy are interested equally with the dean of the college of arts and sciences in having good chemistry instruction available for their students. The comparison of the needs of chemistry with pharmacology can now be made, as well as the comparison of the needs of chemistry with physics or any other department of the college of arts and sciences. This tends at once to smooth out the inequalities of allotments and to give everyone a feeling that his case is fairly heard.

Of course, considerations of the budget by committees such as these cannot be very fruitful, any more than can considerations of the budget by any other officers, unless the right sort of information has been prepared beforehand and is ready to spread out before the members of the committee. This information must consist of at least four bodies of data: (1) a tabulation, by departments, of the average hours per week of teaching; (2) the distribution, by departments, of the size of classes; (3) the distribution, by departments, of the salaries of the teachers; and (4) the salary cost per student credit. These data should be assembled for each department for perhaps the five years preceding, and the trend for each department should be graphically represented so that it can be seen at a glance whether the department is being better supported from year to year or more poorly supported from year to year, as well as how it compares in these four respects with other departments with which it is fairly comparable. Experience shows that with these data at hand there is relatively little disagreement among the members of the committee giving consideration to budget requests. Heads of departments are generally willing to reduce the numbers of their staffs when they see that their own situation, when thrown into bold relief in comparison with other departments, clearly indicates such action.

A schedule of the budget-committee hearings is posted in advance, and any member of the university faculty who cares to is welcome to attend. The president of the university is present at such hearings as he has particular interest in. When the final summary is made up, the completed budget and all the supporting data are transmitted to the president. Such conferences and hearings as he cares to have before

reaching his final conclusions are then arranged, and the budget is transmitted with the president's recommendations to the governing board.

Not only does the budget, when prepared in this way, carry weight with the president and the board, but, as would naturally follow, the deans and heads of departments can intelligently and enthusiastically interpret and defend the budget before other members of the staff who have not had opportunity to go through the deliberations of these budget committees.

### BUDGET-MAKING AND UNIT COSTS

It is widely recognized in theory, though not yet in practice, that budgets of educational institutions cannot be satisfactorily made out without data covering unit costs as indicated in the procedure outlined above. As elements in unit costs, whether calculated on the credit-hour or clock-hour basis, the three principal factors are (1) the average size of classes, (2) the average teaching load, and (3) the average salaries of the teachers. With these data tabulated and graphically presented by departments, it is not difficult to make a budget that is satisfactory to the departments of instruction. Without these data, departmental jealousies, and even departmental logrolling, can scarcely be avoided. Unit costs need not be figured by any long, laborious process, because the most useful type of unit cost for budget matters is the salary pay roll of the department divided by the number of units of instruction. All the other elements in unit costs, such as overhead expense, buildings and grounds expense, library expense, and so forth, play a relatively small part as far as budget-making is concerned. The chief variables are the salary of the members of the staff, the size of classes, and the hours per week of teaching.

It must not be assumed that any one of the three factors named above which are involved in unit costs of instruction is completely standardized. The optimum size of class is not yet established as an accepted fact, and when it is finally established it will probably be found to differ from department to department and from one type of instruction to another. Nor is the most acceptable number of hours per week of teaching fixed. All the evidence assembled to date seems to show that as much labor is involved in teaching ten hours a week in certain courses as in teaching fifteen hours a week in others. Again, since, in the last analysis, the salaries of members of the faculty are determined to a considerable extent by the law of supply and demand, it is practically impossible to have the same scale of salaries for all



departments and all schools and colleges. Therefore, when we urge the use of data bearing upon these factors of unit costs in making up the budget, we do not mean that the budget can be made in a mechanical or mathematical way; but these data do help to remove the more obvious inequalities and assure an increased measure of understanding and good will among the departments and schools that are striving for the largest possible allotment of funds.

#### SPECIAL DIVISIONS OF BUDGET

In addition to the budget for the departments of instruction there are several other budget divisions which must appear in the total. Among these is the budget for research. The common practice in American colleges and universities is to assume that each member of the faculty will be expected to devote a certain fraction of his time to research. Investigation has long since revealed the fact, however, that a considerable proportion of the members of the staffs of even the best American universities do not do the type of research which results in publications. It will probably be admitted, although it is impossible to prove the point, that a great many of them do not do any investigation really worthy of the name. This does not signify that they are not scholarly, nor that they do not keep abreast of their own subjects. In fact, it is altogether possible that those members of the faculty who do not show productive scholarship may be devoting their time to keeping abreast of their own fields and to solving problems of teaching, and thus serving their institutions as teachers even more effectively than those who devote time to research. The reason for raising the question in this discussion of the budget, however, is that, under the common plan of making no special provision for budgeting support for research, we tend to burden with equal loads of teaching those who are competent to do research and those who are not, thus placing a definite handicap upon the productive scholarship of members of the staff who are gifted in research.

Research is one of the major activities of a university, and the amount of encouragement which it should have is one of the major policies to be decided by the president and governing board. In order that the policy thus adopted shall be carried out through the budget, a separate item for research should be established. A special committee should be charged with distributing this research fund. Such distribution should be made prior to the distribution of the regular budget, in order that adjustments in the regular budget may be made according to the allotments from the research fund. For example, if the

research committee believes that Professor X should have one third of his time for research, it is necessary to budget only two thirds of his time to teaching in his department, and this will leave money from his salary to provide extra teaching assistance to take care of the work of the department. If, on the other hand, there is no separate research fund, then either he must do his research work in addition to his regular teaching load, or else, if extra teaching assistance is provided, the departmental teaching budget will be overloaded, and the cost per unit will be unduly high. It seems better, both from the standpoint of sound education and from that of sound accounting, to budget the research activities separately, thus leaving the plain implication that those members of the staff who have not been granted time for research are expected to have a full assignment of teaching or other departmental duties.

Similarly, the budget allotment for the purchase of library books should be handled by a committee. As indicated earlier in the chapter, probably only a part of the allotment, perhaps 50 per cent or so, should be distributed among the departments for the purchase of such books as are obviously needed from year to year to keep up their sections of the library. The other half should be handled as a special reserve and spent on books and sets which do not fall within any departmental interest, or to supplement the departmental allotments as needs vary from year to year.

A similar procedure to the one suggested for the purchase of library books may well be followed by the appointment of a committee for the purchase of departmental equipment. Possibly separate committees for the several schools or colleges may in some cases be preferable, but the money should not be given entirely into the departmental budgets, because this results either in extravagant expenditure or in frozen assets.

### MAKING BEST USE OF THE BUDGET

If the essential points in the making up of the budget are now clear, there remain for consideration the procedures involved in making the best use of the budget during the period of its operation. In the case of a salaries budget this will involve at least three things: (1) the form of printing the budget, (2) the mode of checking the pay rolls, (3) and the form of transfers from one item to another. These will be considered in the above order.

The salary budget sheets for the several departments are commonly brought together and bound in one book, a copy of which is sent to all the administrative officers who are concerned with it. In such cases

it is common to strike two score or so of extra printings of each sheet separately on pay-roll forms, with a blank at the bottom of the sheet for the signature of the head of the department and the dean of the college concerned. These pay-roll sheets are signed for each pay-roll period, presumably each month, and forwarded to the business office as an indication that no change has taken place in the personnel of the department, and therefore that checks may be made for those whose names appear on the sheets. In case changes have been made, these must be recorded on the pay-roll sheet as submitted by the head of the department and approved by the dean of the school concerned.

If, by chance, however, these officials neglect to make the proper changes, the error will supposedly be caught by the pay-roll clerk, who checks all pay rolls against his official budget copy. He is responsible for keeping his official budget copy up to date, embodying all the changes which have been authorized by the governing board. It is not uncommon for the pay-roll clerk to clip from the printed minutes of the proceedings of the governing board the items having to do with any given departmental sheet, and to paste them on a blank page opposite the departmental sheet in the official bound copy of the budget. Then, by scratching off the original item on the official copy, the pay-roll clerk may make an easy and accurate check before the several pay rolls are approved and sent down to the treasurer, who makes out the pay checks.

The budget is not intended as a device to make it unnecessarily difficult to change items. Many changes should normally occur. It is absolutely essential, however, that the budget with its changes be followed rigidly, and therefore provision for changing the budget with ease should be made. The simplest and most satisfactory method of changing the budget is to use the form called the transfer form, by means of which money that appears in one item may be transferred either to another item or to a newly created item in the budget. This form must originate with the officer in charge of the budget where the allotment now is, and must be approved not only by him but by the officer in charge of the department to which the allotment is to be made. It must then have the approval of the business office to indicate that the money is available, and theoretically it must have the approval of the president or other officer most immediately responsible for the entire budget at the beginning, in order that his policies may not be thwarted by transfers after the budget is once made out. Practically, however, if his policies are understood by the business office, the large majority of such transfers may be made without being referred to him. The policy is followed, however, in some places, of having the

president's office approve all transfers, in order that the president's copy of the budget may be kept up to date, and that the president may pass upon the desirability of the requested transfers.

In connection with the question of transfer the practice may be noted of transferring to general reserve all salary items for positions on the instructional staff which have not been filled a month or two after the opening of the academic year. The assumption is that where those items have not yet been occupied by appointments, adjustments have been made in the instructional staff of the department so that the appointee will not be needed for the current academic year. These items frequently make a considerable sum and when transferred to reserve make it possible to assign funds to departments that have found their load unusually heavy by reason of increased registration of students, and thus need additional appointees not contemplated when the budget was made out.

In drawing against the non-salaries budgets for supplies, equipment, books, and the like, requisitions rather than pay rolls are used. These originate in the department responsible for the budget item and are approved by the dean concerned, who in turn submits them to the business office, where they are approved and the purchase is thus authorized.

At stated periods, presumably each month, the business officer of the institution should submit statements showing the status of the several funds, thus making it possible to plan definitely for subsequent expenditures from the fund. Just as it is necessary that each department should know ahead of time the money which is available for its use by means of a budget, so from time to time the department should be provided with a statement as to how much money is left in each fund against which it is authorized to draw requisitions.

As illustrations, the forms used for requisitions and for budget transfers in the University of Minnesota are given on the following pages. These forms are printed on  $8\frac{1}{2} \times 11$  paper.

In the previous pages effort has been made to confine the discussion to these aspects of the college or university budget, namely, the educational significance of the budget, the classification of the items in the income budget, the form of the expenditures budget, the procedures in preparing the budget, and the procedures in using the budget. Many activities in the business office of the institution are intimately related to the budget but cannot properly be treated in a discussion of it. Foremost among these activities is the organization of the accounting office, the purchasing office, the classification of items for the use of tabulating machines, the organization of storehouses for supplies, and

|   |          |  |   |    |     |  |           |
|---|----------|--|---|----|-----|--|-----------|
| <b>UNIVERSITY OF MINNESOTA</b><br><b>PURCHASING FORM 11</b><br>9-12,500 |          |  | <b>REQUISITION</b>  |    |     | BUDGET NO.                             | DEPT. NO. |
| LEAVE THIS SPACE BLANK  |          |  |   |    |     |  |           |
| MATERIAL WILL BE USED FOR   |          |  |   |    |     |  |           |
| ITEM NO.  | QUANTITY | SINGLE SPACE ITEMS IF MORE THAN ONE LINE; DOUBLE SPACE BETWEEN EACH ITEM. USE DITTO CARBON ON DUPLICATE. | ITEMS. (Give complete specifications and catalog number.) |    |     | ESTIMATE                               |           |
|   |          |  |   |    |     |  |           |
|   |          |  |   |    |     |  |           |
| Total   |          |  |   |    |     |  |           |
| FOR USE IN COMPTROLLER'S OFFICE   |          |  |   |    |     |  |           |
| Dept.   | In       | Out  | Dept.   | In | Out | Department                             |           |
| Budget  |          |  | Gen. S.H.   |    |     | Deliver to (Bldg. and Room or Address) |           |
| Purch. Agent  |          |  | Chem. S.H.  |    |     | Requested—Head of Department           |           |
| Inquiry   |          |  | Purch. Agent  |    |     | Date                                   |           |
| Order   |          |  | Inv'ty  |    |     | Recommended—Dean or Admin. Officer     |           |
|   |          |  |   |    |     | Date                                   |           |

FIG. 1. Form of requisition. The spaces in the lower left-hand corner provide opportunity for the comptroller's office to refer the requisition to any one or more of several places for checking before ordering the purchase made

|  |               |                               |                |                  |                                  |        |
|--|---------------|-------------------------------|----------------|------------------|----------------------------------|--------|
| UNIVERSITY OF MINNESOTA<br>COMPTROLLER FORM 1<br>5-26-2M |               | REQUEST FOR TRANSFER OF FUNDS |                |                  | DUPLICATE FOR COMPTROLLER<br>No. |        |
| PAY-ROLL<br>ITEM   | BUDGET<br>NO. | DEPARTMENT<br>LETTER          | SECTION<br>NO. | FUND<br>NO.      | PAGE<br>NO.                      | AMOUNT |
| FROM   |               |                               |                |                  | Total                            |        |
| TO   |               |                               |                |                  | Total                            |        |
| REASONS FOR REQUEST:                                     |               |                               |                |                  |                                  |        |
| REQUESTED—HEAD OF DEPARTMENT                             |               |                               |                |                  |                                  |        |
| RECOMMENDED—COMPTROLLER                                  |               |                               |                |                  |                                  |        |
| RECOMMENDED—DEAN OR ADMIN. OFFICER                       |               |                               |                |                  |                                  |        |
| ENTERED BUDGET   |               | ENTERED PAY-ROLL              |                | APPROVED REGENTS |                                  |        |

Fig. 2. Form for budget transfer

the like. All such activities must be organized so as to integrate with the college or university budget. It is the distinct purpose of the budget, however, to make sure that all the financial agencies of the institution shall operate so as best to achieve the educational purposes of the college or university.

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## CHAPTER XXII

### THE ALUMNI

By WILFRED B. SHAW, Director of Alumni Relations,  
University of Michigan

One of the most characteristic aspects of our American college and university system is the part played by the alumni. Everywhere the graduates are organized into associations which seek not only to advance the welfare of their institutions but also to keep alive something of the spirit of the college life they knew. This incorporation of the former students into the university fellowship is a conception distinctly American. It is entirely unknown in Continental universities, and even in British universities there is very little to suggest the same kind and degree of graduate interest.

Alumni organization has really been a matter of long and slow growth. The beginnings came well over a hundred years ago, though the development has only become noteworthy within the last half-century. In fact, the present phase might well be limited to the last three decades. In 1900 the alumni associations in most universities were just emerging from earlier, rather embryonic bodies, formed more for the sake of good fellowship, the recalling of old ties and old times, than for any definite and continuing program of coöperation and support for their institutions. Only in comparatively recent years have the graduate organizations come to be something more than those older, less significant, and even haphazard bodies through which the alumni functioned effectively as a part of the university only in some emergency. The alumni have come to realize that within their organizations lie possibilities for service to the State and to the highest ideals of American education which cannot yet be estimated. But while the alumni themselves are becoming conscious of this power, the university man, the professor or administrator, has been less ready to acknowledge the new importance of the alumni in the general university scheme.

Our universities are changing, and changing rapidly. The field of knowledge is expanding; the vision of a college diploma attracts more young people every year; women are seeking it on the same terms as men; everywhere the universities are entering into the very fabric



of our national life. The result has been that our student bodies are assuming huge proportions. It is safe to say that many of these developments (marvelously accelerated in the last twenty-five years) would not have come, certainly not on the scale on which we have them today, had it not been for the alumni. Fifty years ago our educational programs looked back to studies which had their roots in the Middle Ages; nowadays the rapid development of the sciences has not only revolutionized teaching, but has also altered profoundly our attitude toward the older, more traditional elements in the curriculum. Instead of resting on the past we are continually looking forward into hitherto unknown fields, seeking to anticipate the coming needs of our communities and our country.

#### THE GROWTH OF COLLEGE AND UNIVERSITY ENROLLMENT

This new view of the university's aims, however, is not all that differentiates the institution of the present day from that of 1875. The most obvious change has been the enormous increase in the number of students and the extraordinary expansion of the facilities and equipment at the disposal of each student. Where there was one student in 1875, there are now over sixteen. Where one dollar was spent then, almost fifty-seven are required today.

Thus in 1875 the total number of students in American colleges and universities was 50,211, while the total amount expended for their education was \$8,466,243. In 1925-1926 the total enrollment had become 822,895, while the receipts, including additions to productive funds, amounted to \$479,774,664. This growth may be illustrated by the record in two leading universities, — Harvard, in the East, and Michigan, in the Middle West. Harvard's total attendance in 1875 was 1240, with an annual income of \$335,464. Fifty-one years later the students numbered 7721, while the income inclusive of additions to endowment had risen to \$11,026,175.<sup>1</sup> At Michigan the record is approximately the same; the total attendance growing from 1191 in 1875 to 12,414 in 1925. During the same period the total annual receipts exclusive of endowment, rose from \$123,160 to \$10,595,300.<sup>2</sup>

This has meant everywhere the continual erection of new dormitories and classrooms and the expansion of libraries, while the growth of scientific studies has necessitated laboratories and elaborate equip-

<sup>1</sup> Report of the United States Commissioner of Education, 1875, and Statistics of Universities, Colleges and Professional Schools, 1925-1926. *United States Bureau of Education Bulletin No. 40*, 1927.

<sup>2</sup> Annual Catalogues, University of Michigan, 1874-1875; Treasurer's reports, University of Michigan, years ending June 30, 1875, and June 30, 1925.

ment. By contrasting the typical college or university campus of fifty years ago with that of today, it can be seen how these readjustments in teaching facilities and buildings have been provided on a scale hitherto undreamed of in human history.

It seems obvious that the alumni have had an important place among the factors responsible for this recent extraordinary expansion, which really goes to the roots of American life. It implies the actual democratization of education. Graduate support, given through organized effort or by individuals,<sup>3</sup> or, in the case of the state universities, by the alumni as citizens, is what has made this revolution in our whole educational outlook possible. It has enabled our universities not merely to keep abreast of the intellectual development of this country, but to guide it. At no very distant day we may well lead the world, if we are to accept the numbers of our foreign students as an indication.

A certain American streak of idealism and loyalty, combined with a hard-headed realistic outlook, has not only inspired this interest but has dictated the practical forms which it has taken. The significant thing about it is that we do not know yet precisely what we may expect in the future, and how the relationship between university and alumni will eventually crystallize. All we know is that just now it is developing faster than ever. The future, as far as alumni effort is concerned, is apparently limited only by the capacity and training of our college graduates for the responsibilities which this new relationship involves, and by the readiness of the college to accept the coöperation of the alumni in the spirit in which it is offered. While the average graduate seldom thinks very seriously upon educational problems, he is acquiring, so to speak, a financial stake in his university. Where his money is, there will his heart be also. The university comes to have for him a significant and personal aspect never dreamed of in an earlier day. He is acquiring a place for himself in the university body as co-partner of the faculty, the students, and the governing board.

#### ALUMNI IN CONTINENTAL UNIVERSITIES

There is nothing to correspond with this sentiment in the older European universities. On the Continent this is particularly true. The fact that higher education is largely in the hands of the state may partly account for the lack of that deep and abiding personal loyalty

<sup>3</sup> Benefactions to American colleges and universities amounted to \$118,144,084 in 1925-1926. They were \$81,722,887 in 1923-1924 and \$77,400,756 in 1921-1922. (Statistics of Universities, Colleges and Professional Schools. *United States Bureau of Education. Bulletin No. 40*, 1927, p. 2; *Bulletin No. 45*, 1925, p. 6; *Bulletin No. 20*, 1924, p. 12.) In large part these gifts may be ascribed to graduate sources.

which is so characteristic of American college graduates. For the German there are, it is true, certain ties of sentiment which bind him to his student days, but they are for his *Corps* or *Burschenschaft*, his fraternity or club. Or his memories may return to his *Verein*, a fellowship for the most part of students in his own special field, such as the *Mathematische* or the *Philologische Verein*. These organizations are not entirely academic, as not a few American university teachers, with memories of many a *Kneipe* in the Germany of the old days, will testify. But for the university itself the former student has little sentiment. Moreover, the German student passes easily from one university to another; the reputation of the teacher is apt to weigh more than the prestige of the institution itself.

The European university is everywhere more distinctly a center of higher learning — a true university — than the average American college or university, which retains in its curriculum two years that are ordinarily included in the more elementary *Gymnasium* course in Germany or in the French *lycée*. Doubtless many of our college students might not attempt the more specialized university courses of the last two years and might end their college courses with the sophomore year, if the equivalent of the Continental system were to be found on this side of the Atlantic. In fact, this may easily be one result of the rapid rise recently of the junior college.

In France, education is even more highly centralized by the state, with the great University of Paris forming the capstone of the whole educational system. Even the convivial ties which are so marked in Germany are lacking. Save as a citizen the Frenchman has no voice in the administration of the university system, nor does he seek to have one.

#### ALUMNI IN BRITISH UNIVERSITIES

In England the situation is somewhat different. The graduates do figure in the picture; they are organized and even have a considerable voice in university affairs. But the very practical help which the American graduate gives as a matter of course is, to say the least, much diluted. The English university man retains a lasting affection for the associations of his college days and a vivid memory of the picturesque quadrangles of Oxford or Cambridge with their ancient weatherbeaten courts and towers, but he is perhaps too much of an individualist to give effective collective expression to this sentiment. The only way in which the Oxford man may enter into university affairs is through what is known as Convocation. This is a body composed of the faculties, the fellows, and the Masters of Arts, the last

being graduates who have retained their membership in their colleges through the payment of certain fees and have received their M. A. in course. The Oxford Convocation has the power of voting on certain university policies, and the privilege is exercised in many a hotly contended debate. This delegation of certain powers to a limited number of graduates results in a relatively small but interested body of graduates, though their organization exists as part of a large university body rather than through the alumni as a separate division.<sup>4</sup> There is, however, an annual alumni gathering which compares in some respects with our class reunions at Commencement time. But any idea of organizing the graduates into local clubs, much less into a great central association with a staff of professional officers, is unknown in the older universities. In fact, such a practice is found only in the great public schools, where associations of the "old boys" are customary.

The American system is more nearly paralleled in the Scottish universities, such as Edinburgh, Glasgow, and Aberdeen, and in the more recently established English municipal institutions such as London, Manchester, and Liverpool. There the alumni have a well-defined, though limited, place. In the Scottish universities they have certain advisory powers, exercised through what is called the General Council,<sup>5</sup> in effect the graduate body, to which all holders of degrees are eligible. From the point of view of organization the most important of these powers is the privilege of electing a certain number of representatives of the governing body of the university, the Lord Chancellor, and a member of Parliament. This prerogative, which is, after all, distinctly political, results in the careful maintenance of graduate lists and a certain pride, on the part of the alumni, in their status as electors.<sup>6</sup>

The alumni, or General Council, also have the privilege of initiating and considering questions of policy, though their function in this case is only advisory and subject to review and report by the University Court. But the organization goes little farther; there is none of the systematic effort to collect funds with which we are familiar, nor are there any class organizations or alumni clubs in different cities. In

<sup>4</sup> See "Report of the Royal Commission on Oxford and Cambridge Universities" (London, 1922) for further information regarding financial support from graduates (p. 54) and proposed reforms in graduate participation in university administration (p. 61, par. 55).

<sup>5</sup> For an account of the legal status of the General Council in the Scottish universities under the Universities (Scotland) Bill of 1858, see James Coutts, "A History of the University of Glasgow, from its Foundation in 1451 to 1909" (Glasgow, 1909), pp. 428 ff.

<sup>6</sup> In July, 1924, an Edinburgh University Alumni Association was formed. (See *Carnegie Foundation Bulletin No. 18*, March, 1927, p. 180, "Games and Sports in British Schools and Universities."

some cases alumni journals are published, but not on the scale to which we are accustomed; nor do they seek to serve quite the same purpose, in many cases appearing only annually or semiannually. Even more conspicuous by their absence are the great gifts from individual alumni that have become so noteworthy in this country.<sup>7</sup>

#### EARLY ALUMNI ORGANIZATION IN AMERICA

With the tradition<sup>7</sup> of the English universities behind them, it was not unnatural that the development of the alumni spirit in American universities, so characteristic of our system, should be slow and tentative. Only the more recent university histories have anything to say of the alumni at all. While we have plenty of evidence that graduates were interested, as individuals, in their colleges, there is no indication of any effort toward organization before the nineteenth century, save in the case of Yale, where the records of class organizations date back to 1792.<sup>8</sup> Their published records begin in 1821 and at the present time amount well up toward 700 volumes, not including pamphlets and address lists. Since the Yale system has always emphasized the class as the basis of organization, it is not surprising that a general association and the organization of local alumni clubs were slow in developing. In fact, the first Yale clubs did not come until 1854. In the meantime many other institutions had already begun to develop alumni associations.

The purpose of these bodies, particularly in the early days, was doubtless essentially social. Probably the aim of the early classes at Yale was merely to enable the different members of the class to keep in touch with one another, rather than to indulge in any program for

<sup>7</sup> For other references to European universities see Charles F. Thwing, *College Administration* (The Century Co., 1900), p. 43; Frederick P. Keppel, *The Undergraduate and his College* (Houghton Mifflin Company, 1917), pp. 325-335; and the *Handbook of Alumni Work* (1917) pp. 6-9.

<sup>8</sup> "Manual of Alumni Work" (1924), Association of Alumni Secretaries, p. 66. This manual, as well as the "Handbook of Alumni Work" (1917) and the reports of the annual conferences of the Association and the Alumni Magazines Associated (which bodies, with the Association of Alumni Funds, were reorganized in 1927 as the American Alumni Council), form the largest and most easily available body of information in this field. These reports, which now cover sixteen conferences, as well as the two books, may be obtained at a small charge by writing to the editor of the American Alumni Council, Mr. R. W. Sailor, Ithaca, New York.

The General Alumni Association of North Carolina has also published a "Handbook of Alumni Work" (1925), by Daniel Lindsey Grant, Executive Secretary of the Association. "Class Secretaries and their Duties," (1913), by Henry P. de Forest, Cornell Association of Class Secretaries, is extremely valuable. The Harvard Alumni Association has a very useful "Handbook for Harvard Clubs" (1924), while Michigan has pamphlets on "Alumni Organization" and "Alumni Funds."

the advancement of the interests of the university. It is safe to say, however, that there was some effort on the part of individual members to keep in touch with the progress of the university, for it is impossible to believe that human nature in those days was as different as such a lack of interest would imply. At any rate, it was not long before these efforts were followed in all the other little colleges along the Atlantic seaboard which comprised the whole of our higher educational equipment one hundred years ago. These organizations almost invariably took the form which has been followed in most institutions down to the present day, a "society of the alumni," or "alumni association." At first they were rather social, even convivial, in their objects, but a sense of responsibility toward the institution developed very early, if we are to judge from the preambles of their constitutions. Thus, in one of the very earliest of these associations, the alumni of Williams declared, in 1821, that the purpose of their organization was "that the influence and the patronage" of those whom Williams College "has educated, may be united for its support, protection and improvement."<sup>9</sup> This suggests some idea of a constructive relationship, further emphasized in a statement in the formal summons for the first meeting, which might at least be taken to infer that some active measures on the part of the graduates were desirable. It was "called at the request of a number of gentlemen educated at the institution who are desirous that the true state of the college be known to the alumni."

More distinctly social in its import was a similar call issued by the alumni of the University of Virginia in 1838, when the committee was instructed "to notify the alumni to form a permanent society to offer to graduates an inducement to revisit the seat of their youthful studies and to give new life to disinterested friendships founded in student days."<sup>10</sup>

Other colleges followed the example set by Williams. Class organizations doubtless existed in other institutions, as well as at Yale, but the whole trend was toward the general associations. Thus, alumni associations were organized at Princeton and at Columbia College in 1826, and at Pennsylvania in 1836; Harvard's came in 1840; two years later Amherst and Brown followed suit. Meanwhile the idea was spreading to the newer colleges of the Middle West, where alumni organizations almost invariably came close upon the

<sup>9</sup> Calvin Durfee. *A History of Williams College*, p. 192. Boston, A. Williams & Co., 1860.

<sup>10</sup> J. S. Patton. *Jefferson, Cabell, and the University of Virginia* (New York), p. 322. The Neale Publishing Company, 1906.

heels of their establishment. As early as 1832 there was an organization at Miami, while alumni associations at Oberlin and Denison came seven years later.

The next development in American education was the rise of the great state universities of the Middle West, beginning with the establishment of the University of Michigan in 1837. Almost simultaneously with the graduation of the first class an alumni organization of sorts was effected, which, while it was composed of all the college men in the little community which was then Ann Arbor, also included the twelve graduates of 1845.<sup>11</sup> Their first item of business was, apparently, the selection of an orator and a poet. For some years Michigan maintained a curious roster of its graduates in the annual catalogues under the caption "Alumnorum Catalogus," in which the familiar William, Charles, and John appeared as Gulielmus, Carolus, and Johannes.<sup>12</sup>

The other Western state universities fell into line as fast as they were established, so that by 1875 the essential features of the present system of alumni organization were everywhere recognized. The resulting associations, however, were weak and far from ambitious, with little in many institutions to indicate the remarkable development which these organizations of college graduates have since had, or the power which they are acquiring in university affairs.

#### EFFORTS TOWARD GRADUATE COÖPERATION

While, as has been suggested, the principal motive behind these earlier alumni activities was largely social, it was not long before other possibilities suggested themselves. It is probable that, from the very first, certain of the graduates of these early institutions, living near at hand and deeply interested, had an important share in directing the development of their institutions. The relatively early establishment of the Eastern colleges, the fact that they were supported either by the Church or by private endowments which it was desirable to increase, as well as the influential status of the college graduates themselves, were all factors which contributed toward strengthening their alumni organizations. Even more important, they suggested definite objectives which are only beginning to be recognized in many other sections of the country.

To secure an assured place in university councils was one of the first constructive efforts made by these bodies of graduates. While the

<sup>11</sup> *The Michigan Alumnus*, February 27, 1926, pp. 381-382.

<sup>12</sup> The Quinquennial Catalogue of Harvard followed this practice until 1890.

personal and unofficial influence of individual alumni had always been considerable, the institutions were slow to grant the organized graduates a share in the determination of policies. Even the striking example of Oxford, where the final word in many important matters rested with the Convocation, or alumni body, failed to convince, perhaps because this influence was all too often exerted "to kill every scheme for educational reform."<sup>13</sup> It was not until 1865, and then only after a long struggle, that the privilege of electing the members of the Board of Overseers at Harvard was secured by the alumni; Yale graduates were permitted to elect six trustees in 1872; while at Princeton the alumni were not represented on the Board of Trustees until as late as 1900. Now eight out of the thirty-five members are elected by the alumni. In the Middle West, however, alumni sat with the Board of Trustees of Oberlin as far back as 1870, and in 1879 the graduates gained the right to elect one fourth of the members of that body.<sup>14</sup>

While these privileges were duplicated, sooner or later, in most endowed institutions, the problem of definite alumni participation proved more difficult for the state universities. There the control of the institution is vested, by constitutional provision, in the people of the state through a board of regents, ordinarily appointed by the governor or, as in the case of Michigan, elected for a term of eight years directly by the voters. In a few institutions, notably the University of California, provision has been made through a referendum vote for the election by the alumni of one member of the board of regents. For the most part, however, the alumni of state institutions can exert only an advisory and indirect influence, though on more than one occasion it has proved remarkably effective.<sup>15</sup>

In one respect, however, the alumni of the state universities seem to be coming to exert a direct and wholesome influence, the strength of which is somewhat proportionate to the age and prestige of the institution. Undeniably there is a tendency for the state university in its earlier years to become the plaything of politics; few state universities have escaped this experience; but as the alumni body grows and becomes conscious of its prerogatives and powers, a current of opinion is sure to be formed which strongly resents interference with university policies on the part of the state administration, and eventually assures to the institution the freedom to develop in accordance

<sup>13</sup> Frederick P. Keppel. *The Undergraduate and His College*, p. 229. Houghton Mifflin Company, 1917.

<sup>14</sup> *Manual of Alumni Work*, pp. 28-33, "Alumni Representation on Governing Boards." Association of Alumni Secretaries, 1924.

<sup>15</sup> Report of the Ninth Conference, pp. 84-86, "Responsiveness of Alumni Trustees to Alumni Body." Association of Alumni Secretaries, 1922.



with the best traditions of higher education. One might cite the early experience of Michigan, the later troubles of Texas and Oklahoma, and the still more recent deposition of President Suzzallo at the University of Washington, to show how the alumni influence can be made effective, unfortunately not so much as a corrective for the immediate case in question as a restraining force aroused to bring public opinion to support the university and to prevent further interference.

#### THE GENERAL FEATURES OF AN ALUMNI ORGANIZATION

Thus these graduate federations, associations, councils, whatever they may be called, have been growing at a constantly accelerating rate for at least a century, until they have come to assume a definite form, with certain accepted features which have been adopted in almost every American university. While the general outline is apt to be the same everywhere, the pattern is often varied by the stress laid upon different aspects of alumni effort in different institutions; variations which have developed naturally through difference in size, educational program, geographical location, type of student body, and method of financial support. Thus the special problems of the older endowed college or university, as they affect, or are affected by the alumni, are very different from those of the great state universities, just as those of the small denominational college vary widely from those of a state college of agricultural and mechanic arts.

There is almost no phase of university life with which the alumni have not somewhere identified themselves, although usually their principal effort is directed where the need of the institution is greatest or at least most obvious. Every institution is always in need of financial aid, so the great "drives" become one of the most logical forms of alumni activity, through which literally millions and hundreds of millions of dollars have flowed into college and university treasuries. This form of alumni support is becoming quite as necessary for the state universities as for the universities supported by a fixed endowment.

As has been suggested, the relatively more pressing need for outside support on the part of the endowed institutions has been an important element in the strength of their alumni organization. Almost necessarily they have been more active and vigorous in their efforts to enlist the active aid of the alumni, setting the needs of the institution before them as effectively as possible.

It is, of course, far from true that the reason for alumni organization rests upon a financial basis, but if one were to analyze the thought of most college presidents toward the alumni, one would find that at

least there was a golden glow in the background. In the nature of things this is somewhat less true, however, where an institution receives regular support from some outside source, as in the case of universities supported by Church or State. But, after all, such outside support is usually only sufficient for the bare necessities of university development; in the state institutions, certainly, the number of students seems to grow faster than the ability, or rather the willingness, of the average citizen to give adequate support. Moreover, in the very nature of things, if the university is to lead as an intellectual and social force, it must have facilities for which the people almost inevitably are slow to appreciate the need.

Not seldom these efforts on the part of the graduates are for specific purposes,— professorships, laboratories, libraries, new buildings, the establishment of new departments,— all objects which, while they have a practical appeal, also serve to advance fundamental educational interests. Then we have studies of various administrative and educational problems; we have committees on the various schools and colleges, and on dormitories, athletics, research, and university history and memorabilia.<sup>16</sup> In some institutions exhaustive surveys have been made of existing conditions in student life and educational tendencies have been instituted.<sup>17</sup> Courses of reading for alumni have been established,<sup>18</sup> as a means not only of furthering the educational welfare of the institution but also of keeping alive an intellectual relationship between college and graduate. Other almost invariable activities are the publication of a journal as a semiofficial university organ and the organization of alumni by classes and in alumni clubs in different cities. In many institutions the maintenance of alumni lists and, as we have seen, the election of a certain number of the trustees are part of the duties of the alumni body. Moreover, when some special need arises, effort is made to secure funds for the purpose from the alumni, — a task that covers a host of enterprises, some small and some large. Finally, and almost invariably, the support of athletics seems to be always dear to the graduate heart.

All these activities and many more which might be suggested, such as finding employment for students and alumni, and the correlation of the facilities of the institution with the needs of the community, have been somewhere undertaken by the alumni organization, but nowhere at present are all these activities carried to their fullest logical

<sup>16</sup> See annual reports of the meetings of the Associated Harvard Clubs.

<sup>17</sup> Address to the Trustees of Amherst College by the Class of 1885. New York, 1910.

<sup>18</sup> Amherst, Dartmouth, Smith, Lafayette, and Pittsburgh.

development.<sup>19</sup> They may all be taken, however, as indicative of the far greater degree of participation in university affairs on the part of the alumni, which may easily come in the future.

#### METHODS OF ORGANIZATION

To carry on these multifarious activities which seem to fall within the province of the alumni body a general and flexible plan of organization has developed on the basis of the alumni associations of the earlier era. Usually these organizations take the form of a general alumni association, or, as sometimes called, an alumni council, in which all graduates and, ordinarily, nongraduates who were in residence for at least one year, may become members. These organizations form the direct avenues for the expression of the interest which the average alumnus has in his alma mater. Upon their officers devolves the duty of giving a definite and concrete expression of this desire of the graduate to do something to further, even in a small way, the interests of the institution whose degree he holds.

In most colleges and universities the alumni organization is entirely distinct from the university, though in many cases the first impetus toward organization has come from the institution itself. There is a feeling on the part of many university graduates that the alumni organization should keep itself apart. It should be free to assert the graduate attitude on important questions, particularly when the body of alumni opinion runs contrary to that of the university officers.

In many institutions, also, other alumni organizations have arisen, which supplement the work of the central body, either as subordinate or as parallel organizations. Thus we have alumni councils created to give definite expression to alumni opinion and to coöperate in university affairs more directly than is possible with a larger body.<sup>20</sup> The Board of Overseers at Harvard University, the members of which are elected by the alumni, is the outstanding example of a body of this kind. Many institutions have also created alumni corporations for the maintenance of special funds to be administered by the alumni for what, in the officers' opinion, are the best interests of the university. The Alumni Fund at Yale, which has been in operation for over thirty years, is the parent of this type of alumni activity. Some of the larger

<sup>19</sup> For a representation of the activities of an alumni office see "Manual of Alumni Work," pp. 39-47. Association of Alumni Secretaries, 1924.

<sup>20</sup> Manual of Alumni Work, pp. 34-38, "Alumni Advisory Bodies" (Association of Alumni Secretaries, 1924); also Charles W. Eliot's "University Administration," chap. ii, "An Inspecting and Consulting Body — Alumni Influence" (Houghton Mifflin Company, 1908).

institutions have also created special organizations of class secretaries, which serve, through the interchange of ideas and inspiration, to stimulate and maintain at a high pitch the effectiveness of the class bodies which they represent.

The method of electing alumni officers varies widely in different institutions. In some places they are elected by a ballot sent by mail; in other institutions the old practice of holding an annual meeting of alumni continues, and the officers are elected at that time. This method, however, is being discarded more and more, particularly by the larger universities, as affording an inadequate representation for the whole body of alumni. In some institutions the directors are elected, or appointed, as representatives of the different schools or colleges that comprise the university. The modern alumni organization, however, is likely to base its organization upon a combination of several plans. In one institution the directors are elected by the classes and the local alumni clubs, with the board of directors, thus formed, empowered to elect from their body the general officers of the association; in another a certain proportion of the directors represents the clubs, others are elected at the annual meeting, while still others represent the alumni at large.

#### THE EXECUTIVE OFFICERS

Within the last thirty years the rapid development of alumni organizations everywhere has brought into existence a new type of university executive officer. He is usually called the Alumni Secretary, although the exact title varies. More often he is the General Secretary of the Alumni Association, sometimes the Executive Secretary; occasionally he carries the title of Alumni Representative, or Business Manager, depending somewhat upon the special functions that he assumes.<sup>21</sup> More recently another alumni executive officer has emerged, the field secretary, whose duties supplement and complement those of the alumni secretary.

As the organization grows, the alumni secretary, one of whose most important duties is likely to be the editing and publishing of the alumni magazine, finds it difficult to spend as much time traveling among the alumni, organizing local alumni clubs and classes, as is desirable and in fact necessary. These duties are therefore tending to fall upon this new officer, who spends at least a certain portion of his time making personal contacts with the alumni in the field. It is safe to say also that, as alumni organization progresses and alumni activities become more

<sup>21</sup> Manual of Alumni Work, p. 23. The first appointment to this office was made at the University of Michigan in 1897.

centralized in the general association, a third officer will be developed, whose duty it will be to maintain the alumni lists, publish alumni catalogues periodically, and stimulate in every way the efforts of the class officers. In a sense he would be a Secretary of Class Secretaries. Many universities already have officers of this type, though, as at Yale, they are university rather than distinctly alumni officers.

#### FUNDAMENTAL AIMS

Under this general scheme of organization the alumni have already become a potent force in university development. Before some of the particular aspects of alumni activities are discussed a little more in detail, it might be well to consider just what the alumni are seeking to accomplish through this machinery which they are building up.

What are the fundamental aims which underly this effort? Certainly the social aspect of college days and college associations has had its influence. Memories of old times and the effort to keep alive or to renew the "disinterested friendships of student days" have much to do with the original impulse. But the increasing need of financial aid on the part of every college and university has had quite as much to do with keeping these organizations alive and stimulating their further growth. It has given them something definite to do, a concrete means through which the desire of every graduate to be of service to his alma mater may be given expression.

Underlying these more obvious elements, however, other and more potent factors might be suggested. In the first place, the average American college graduate has, and apparently always has had, a close sentimental attachment for the institution which fostered his intellectual development. It is, as one alumni president expresses it, "the love for an institution that has been a dominant factor in shaping his career." A sense of obligation is implied in this sentiment. In one instance this has taken the form of a definite proposal that, wherever possible, the graduate should endeavor to give to the university, in his more prosperous years, at least the difference between what the education he received actually cost the institution and what the recipient paid for it.

There has also been developing the view that, once established, the close relationship of college days should be maintained throughout the whole life of every student,— that the college years are only an introduction. University administrators are coming to realize that our colleges and universities, in a degree, have failed in their educational tasks, if the end of all things academic comes with the granting of the

diploma. Commencement, instead of being the end, as it too often is, should be a continuation of the relationship in a new form. Thus the function of the alumni organization is not only to guide and stimulate the filial affection of the individual graduate, but also to keep alive the spirit of the university in the give and take of active life.

In the words of President Garfield of Williams,<sup>22</sup> the alumni association is "an avenue of approach between the alumnus and the active college body," not a "one-way street." Along this highway traffic should pass in both directions. The message of the university should continually reach those who owe allegiance to it, while from the alumni should come support, not merely in concrete and tangible benefactions but in advice and help in a thousand forms.

Thus the alumni organization stands as an interpreter, bringing the idealism and intellectual stimulus of the university to the alumni while carrying the enthusiasm and practical support of the graduate to the institution.

#### THE METHODS DEVELOPED

The means that have been developed on the part of the alumni to stimulate this contact have naturally varied, as we have seen, from one phase of alumni organization in some institutions to an entirely different series of activities elsewhere. Thus Harvard's whole system is, in general, based upon her strong federation of Harvard Clubs,— a body distinct from the General Alumni Association. The alumni publication is in turn a corporation distinct from either, though it is the official organ of the Alumni Association and a large portion of the stock is held by the Secretary of the Alumni Association. Yale, with its class organization, stimulated most effectively by its Class Secretaries Bureau maintained by the university, and with the *Alumni Weekly* published by a private corporation, has developed in an entirely different direction and in many respects is unique in the form taken by its alumni activities. It has no body equivalent to the usual Alumni Association. Princeton's graduate council, based upon both the classes and clubs, is the active heart and brains of her whole system. The *Alumni Weekly* is published by the Princeton Press. Cornell University also maintains an Alumni Fund, with a director who devotes his full time to the work. This fund, which, unlike the Yale Alumni Fund, is administered by the Trustees of the University, also supports the work of the Alumni Representative, whose task is the maintenance of graduate records and the stimulation of alumni club and class organization.

<sup>22</sup> Report of the Thirteenth Conference, p. 95. Association of Alumni Secretaries, 1926.

Here again the alumni journal is published by a private corporation, owned by a number of interested alumni.<sup>23</sup>

Michigan, on the other hand, has developed its alumni work almost entirely within the association itself, with the single exception of the alumni records, which are kept by the university. This is the plan adopted by almost all the large state institutions. The magazine, in the case of Michigan a weekly, is edited and published by the association in its own printing establishment. Michigan differs, however, from most of the other state universities in resting the organization more directly upon the alumni clubs, divided into districts, each of which is represented by one of twelve directors upon the general board. The stimulation of class organization is similarly a function of the general association, with three of the directors chosen to represent the classes, in addition to those representing the districts.

A similar plan of organization is in effect at the University of North Carolina. At Columbia and at Chicago the directors of the association are chosen partly to represent the different schools and colleges, which maintain their own separate alumni bodies. In fact, the general organization of the alumni at Columbia is known as the Columbia Alumni Federation. As an indication of the growing professional status of the alumni executive officer it is perhaps significant that two of the recent alumni secretaries at Columbia University have been alumni of other institutions, one holding a graduate degree from Columbia and one enrolled as a graduate student.

Thus it will be seen that several types of alumni officers have been developing, in addition to the alumni secretary. These include the editor, the field secretary, the officer in charge of the alumni catalogue and class organization, and the alumni-fund agent. In no institution, however, have all these officers, with their widely varying functions, come under the direction of one central alumni organization. In many universities one or all of these activities are maintained either by the university or by separate alumni bodies created for the specific purpose.

In the smaller institutions these separate functions must necessarily be performed by the general secretary or divided between two or more executives who may give only a part of their time to this work. If the publication is a monthly or a quarterly, the demands upon the editor's time are less insistent, permitting him to devote at least a part of his time to cultivating the development of the alumni groups and classes,

<sup>23</sup> A more detailed survey may be found in "A Report on Alumni Organization," Alumni Association of the University of Michigan, 1922. Copies may be obtained from the Alumni Secretary at Ann Arbor. A report on alumni funds, prepared in 1924, may also be obtained from the same source.

with perhaps enough hours left over to direct the work of an office assistant in maintaining an alumni list. It is important, however, for the alumni officer to understand the differentiation between these functions, even if they are performed by the same person. Likewise, in considering the special tasks of the average alumni association, it must always be remembered that not all the activities enumerated are necessarily to be carried on by the association itself.

### THE ALUMNI PUBLICATION

Ordinarily the publication of an alumni journal is the most important, or at least the most tangible, function of the association. This is true despite the fact that in some institutions the magazine is sponsored by a semiprivate corporation. In such cases, almost invariably, there exists a close coöperation between the publishing body and the university.

In and of itself the alumni magazine gives most alumni associations an effective reason for existence. It often furnishes the necessary support for the other undertakings of the alumni. Usually the alumni secretary acts both as editor and as publisher, though sometimes he contents himself with the title of business manager and leaves the editorial duties to some alumnus who may or may not be a member of the faculty. In any case the alumni journal has the status of an unofficial university publication.

At present there are nearly two hundred alumni publications,<sup>24</sup> some of them with twelve or fifteen thousand subscribers. The rise of these magazines is almost exactly contemporaneous with the development of the larger aspects of alumni activities. The first of the long series to be established was the *Yale Alumni Weekly*, which appeared in 1891; a year later the *Harvard Graduates' Magazine*, a quarterly, was established. In the west, Michigan followed in 1894 with the *Michigan Alumnus*, at first a monthly magazine, now a weekly. All these were first published on private initiative, although the *Michigan Alumnus* was taken over by the Alumni Association in 1897. The *Alumni Register* of the University of Pennsylvania was established in 1895, the first publication undertaken directly by an alumni organization.<sup>25</sup>

From the first the aim of these publications has been twofold. They have sought not only to carry to the alumni information about the university, but also to serve as a convenient forum for the expression of

<sup>24</sup> Manual of Alumni Work, Part II, "The Alumni Publication." Association of Alumni Secretaries, 1924.

<sup>25</sup> Ibid. Appendix, pp. 278-281.



alumni opinion and as vehicles for the dissemination of information concerning the alumni, — accounts of the work of well-known graduates and personal items giving addresses and records of births, marriages, and deaths. By far the larger number of alumni magazines appear as monthlies, at least during the college year. There are many obvious reasons for this form. It does not make the demands upon the editor that a weekly does, which must appear almost on a newspaper schedule. It gives him more time to prepare his material carefully, with a larger number of pages in each issue. Ordinarily a better typographical appearance is possible, and the busy time for the editorial staff is concentrated rather than scattered over the period of four weeks.

Nevertheless there are many reasons which have led to the adoption of the weekly form by most of the larger universities. The most important reason is that the interest of the graduate is stimulated once a week instead of every month. The weekly, ordinarily carrying a smaller number of pages, is more easily read than the monthly or quarterly and is therefore more likely to be glanced over immediately than is the bulkier magazine. The news conveyed to the alumni by the weekly is also fresher and usually more informal. The speedy review of athletic events is particularly appreciated by many alumni.

As for the quarterly, the purpose served is essentially different from that of either the weekly or the monthly. Usually it is a review, — an authoritative summary of the events of the college year, — containing literary and critical articles which are particularly appreciated by the older alumni, though they may find less favor with the younger graduates. Harvard, with its two alumni publications, the quarterly *Graduates' Magazine* and the weekly *Bulletin*, seems peculiarly well equipped to cover the alumni field.

### THE ALUMNI EDITOR'S TASK

The editor of an alumni journal will never find his position an easy one. His constituency is wide, varying from the conservative older graduate, whose interest lies in the permanent aspects of university life, to the youngster just out of college, for whom the details of student life and athletics are all-important. Both graduates, however, are interested in the material progress of the university and in the record of what their classmates are accomplishing. The editor must steer an acceptable course between the demands, often insistent, sometimes unreasonable, of those whose main interest lies in athletics and those for whom the place of the university in the world of thought, of liter-

ature, and of science has the strongest appeal. The older alumnus is apt to value reviews of university life and progress, reminiscences of the past, and biographies of its great men. The younger graduate wants news, and he wants it immediately.

Thus to the editor, particularly if he is also alumni secretary, there comes a grave responsibility. He is not only an interpreter of the university and its life to the alumni, but equally he is charged with bringing something of the vigorous spirit of the successful graduate to the university. He must not only satisfy the immediate demand for news, personal items, and reliable accounts of athletic events but he must also seek consciously to reflect the higher mission of the university in every page of the magazine. The young alumnus, who begins by glancing at the page where the news of his classmates appears, reads the report of the football games, and then throws the magazine aside, will end by reading every page of the magazine and come to take a deep pride in the achievements which it reflects.

In many cases the subscription to the alumni publication is equivalent to official membership in the alumni body, though this is by no means always the case, even where the magazine is published by the alumni organization. Of necessity the alumni journal is often supported and underwritten by the institution or by a body of patriotic alumni; but as the subscription list grows, this becomes less and less necessary if the publication is wisely managed.

The task of securing an adequate subscription list is not always an easy one. Usually the graduating class forms the most effective medium for a normal increase, though many names can be added through the work of solicitors and through the help of the class secretaries and local club organizations. Experience has shown that there is a point of saturation in the average alumni body beyond which it is difficult to hold new subscribers. They may be secured at the expenditure of some effort, but a certain proportion of them are sure to drop out at the end of the year, so that the effort costs more than the single subscription warrants. This point, beyond which it is dangerous to force the number of subscribers, should ordinarily be between a third and a half of the total number of graduates.

#### ADVERTISING AS A SOURCE OF INCOME

The advertising published in a college alumni journal is, or should be, an important item in its budget, though the difficulty of securing advertising for publications with a relatively small circulation has made the problem an increasingly difficult one in these days of scien-

tific publicity. There are two kinds of advertising upon which the alumni magazine can draw, — local and national.

For the smaller magazines the more profitable form is the advertising of local manufacturers and tradesmen, since the rate per thousand of circulation may be much higher than is possible when dealing with the more analytical advertising manager of a big firm. While the actual amount which can be charged for an advertisement of this class is small, the aggregate total for the year may easily prove surprisingly large. Closely allied to this form of advertising are the advertisements contributed by alumni at the head of concerns which advertise rather widely. It is often possible in this way to secure the inclusion of the alumni magazine in the advertising budget of a large firm. Many business men, however, are much opposed to this practice, since it lays them open to solicitation from literally hundreds of other graduate and undergraduate business managers who are not aware of the personal connection in the one case.

Pages of business cards, which can be run as a "professional directory" are appearing in many magazines. These can be published at a comparatively low rate, though aggregating for the magazine a higher return per page than the normal advertisement. Small advertisements of groups of firms in the same field, such as stock-and-bond houses, insurance companies, or retail specialty stores, can be combined, particularly if appropriate reading matter accompanies them.

The alumni magazines, however, are coming to rely more and more on what is known as national advertising. They are seeking, with some degree of success, to appeal to well-known firms who see in them, in spite of a relatively high rate in comparison with such magazines as the *Saturday Evening Post*, an opportunity to reach a selected group of educated men and women whose potential buying power is very large. The magazines have formed an organization among themselves to secure this advertising, based upon a total circulation of some 230,000 bona fide subscribers.<sup>26</sup> It is recognized that advertising of this character is far more dignified and worth while than the cards of local tradesmen, who usually advertise from a sense of duty rather than from any idea that they can reach a great number of possible buyers in the scattered alumni body.

<sup>26</sup> The Intercollegiate Alumni Extension Service, 369 Lexington Ave., New York, in addition to maintaining alumni headquarters in some fifty hotels all over the country, with alumni magazines and address lists on file, is prepared to secure national advertising. See *Report of the Thirteenth Conference*, Association of Alumni Secretaries (1926), pp. 116-130.

## THE LOCAL ALUMNI CLUB

The local alumni associations or clubs present a different problem from the alumni magazine. To be successful they must have some real excuse for existence based on a constructive program beyond the social and reminiscent spirit that almost always underlies their first efforts. With the smaller institutions, as well as with the endowed universities, such activities are more easy to supply than in the case of the state universities. Many of the smaller colleges are always looking for more students, while the endowed universities are coming more and more to look to their alumni for financial support. In some of the larger cities the alumni clubs have found an effective outlet for a part of their energies through participation, in some measure, in the public life of their communities, and in social-welfare and educational efforts of various sorts. But in the final analysis the effectiveness, and in fact the continued existence, of the local organization rests upon effective coöperation with the institution.

The problem of supplying the local clubs with worth-while and practical avenues for the expression of their interest in the university is always a thought-provoking task for the alumni officers, particularly the field secretary. It is never wise to make too many demands for financial support upon local groups. In fact, many of them definitely provide that no solicitation of funds for any need whatever, even dues, shall be made at any of the meetings. Many alumni who would enjoy the fellowship of their fellows deliberately stay away from these meetings because they know from past experience that they will leave poorer as well as wiser in regard to the needs of the university.

There is a definite need for a type of collective activity which may be adopted even by the small and weak alumni group. Such programs, which have been supplied, include lectures from faculty representatives on the progress of the university itself and on advances in their own field, the presentation of awards to students in the local high schools for outstanding qualities in scholarship, athletics, and leadership, the supplying of books concerning the university, and pictures, to the high-school library, the establishment of scholarships for deserving students, the dissemination of information concerning the university in the local press, the arousing of support for the university among the voters in the case of the state universities, the securing of subscriptions to the alumni magazine, and the distribution of tickets to the football games on an equitable basis to the alumni. Of course, always and inevitably, the general support of athletics is one of the activities which especially appeals to the local alumni clubs.

In some universities, the local club forms the real unit upon which the whole alumni system is built. Each of them becomes in effect a branch of the general alumni association, with a charter and a uniform constitution and by-laws prepared by the general association. In some universities these clubs are roughly divided into districts,—according to the number of alumni in the district. These districts, at an annual meeting in some convenient place, elect their own officers, including a director to represent it on the board of directors of the general association, and send delegates to an annual, biennial, or triennial meeting of all the clubs. Such general meetings, which are almost invariably held at some center other than the university itself, are coming to have an important place in university activities. Particularly is this true in the case of the larger universities.<sup>27</sup>

The task of the general secretary or, where such an officer exists, the field secretary in stimulating the organization of these groups of alumni and in maintaining their efficiency, is not an easy one. It calls for idealism, intimate knowledge of the university, diplomacy, and occasionally the iron hand in dealing with officers who are fond of the perquisites, but not the duties, which go with efforts in behalf of an organization of this kind. Frequently the demands upon the time and energy of the active officers are also very great. Fortunately for these clubs, however, there are always interested and enthusiastic young alumni who are glad to widen their contacts among their fellow, and are willing to do the necessary spade work without which an alumni club cannot continue to exist. Sometimes, it is true, the effort thus expended seems to be dissipated in college songs and yarns about old times; but usually the tangible results, the active and constructive effort of many members of the local body to advance the welfare of alma mater, and the interest shown in the discussion on university affairs which invariably follows the delivery of a message directly from the university, amply justify the existence of these organizations.

### THE CLASS ORGANIZATION

As we have seen, alumni organization, in all probability, had its origin in the very natural desire of classmates to get together once in a while to renew old fellowships and find out how things were going with the college. The first organization that we know anything

<sup>27</sup> Manual of Alumni Work, p. 61; Report of the Tenth Conference (1923), p. 145; Report of the Twelfth Conference (1925), p. 111; Report of the Fourteenth Conference (1927), p. 97. The Association of Alumni Secretaries, (now the American Alumni Council).

about was definitely based on the class, and it is safe to assume that the impetus in many other institutions came from the same source. Most universities have recognized from the first the importance of the class as a unit in the general scheme of graduate activities, though for various reasons other aspects of alumni association have in some places overshadowed the class group.

As we have noted, Yale is one of the institutions which has always remained true to the original impulse. There the importance of the class has been recognized and the maintenance of the class organization on an effective basis has been not merely an alumni but a university concern.<sup>28</sup>

In the organization of the alumni by classes the work of the class secretary is of the greatest importance. It is coming to be recognized that in many universities, particularly in these days of large classes, his task is really beyond the powers of one man. The mere weight of the personal correspondence, the work of gathering news and of verifying and publishing class lists on a systematic and authoritative basis, is ordinarily too much to be handled without expert assistance. This assistance Yale University supplies through what is known as a Class Secretaries' Bureau, with a director who attends, as far as is possible, to the detailed and routine work (which elsewhere ordinarily falls to the lot of the class secretary), the securing and collating of addresses, the publication of lists, the preparation of class notes, and routine correspondence. Upon the class secretary falls the more pleasant task of putting the personality, the individual touch, into the work, — the preparations for class reunions and other gatherings. The same careful organization of classes is to be found in substantially all the older Eastern colleges. In Harvard and Princeton, class funds are provided from which the expenses of the reunions, annual dinners, and publications are defrayed. The classes at Princeton provide a fund sufficiently large to send the alumni magazine to every member, so that every graduate of Princeton since 1890 now receives the *Alumni Weekly*.<sup>29</sup>

Such a close-knit organization as this implies depends in good part upon the development of a strong class feeling during undergraduate days, and is only possible where the students meet one another continually in the classroom. In the larger universities, where there are many divisions and where the elective system permits sophomores,

<sup>28</sup> Manual of Alumni Work (1924), chaps. xiii-xv, and Handbook of Alumni Work (1917), chap. vii (both published by the Association of Alumni Secretaries); also Henry P. De Forest, *Class Secretaries and their Duties* (Cornell Association of Class Secretaries, 1913).

<sup>29</sup> Manual of Alumni Work (1924), p. 161.

juniors, and seniors to meet in the same courses, the ground is less fertile for a strong class spirit. For that reason the class organizations have always been relatively weak in the larger state universities of the Middle West.

### CLASS REUNIONS

The essence of class spirit, as far as the alumni are concerned, lies in the class reunions which are ordinarily held at five-year periods. These are the events around which the class organization centers and through which the interest of many alumni in the university is stimulated and fixed for life. As far as is humanly possible the years are rolled back at this season. The oldest graduate endeavors to re-create, in association with his old friends and companions, the atmosphere of a halcyon period long past, while younger alumni seek in picturesque costumes, parades, and general hilarity to shake themselves free from the responsibilities of life. Commencement in many institutions means a keen rivalry on the part of many classes over numbers in attendance, gayety of raiment, and aggregate miles traveled. But underneath the carnival spirit there lies a serious appreciation of a certain responsibility toward the institution, often expressed in generous contributions toward class funds, alumni funds, scholarships, and other indisputable evidences of alumni good will.

Within recent years a new plan for holding reunions has been growing in popularity. This brings back at the same time a number of classes that were in college together. The plan, first developed at Princeton, is known as the Dix Schedule, and while it ordinarily follows the traditional practice of holding reunions every fifth year, it pays no attention to the regular five-year and ten-year anniversaries of the older plan. The Dix Schedule is arranged as shown on page 676 for the years 1928-1939.

Under it the classes meet in groups of four, so arranged that in a cycle of four reunions members of a class will meet with all the other classes which were in college with them; at the first reunion those when they were freshmen, next the group when they were sophomores, and so on. This reunion plan has been adopted in some of the larger institutions with a certain degree of success. Many classes still prefer the old regular five-year period, however, particularly on the quarter-centennial and semicentennial anniversaries, and pay no attention to the new plan. Wherever the Dix plan has been inaugurated it has proved wise to try both forms at the same time, so that the change from one system to the other may not be too radical. In this as in many other things, alumni are conservative.

# HIGHER EDUCATION IN AMERICA

## THE DIX SCHEDULE FOR CLASS REUNIONS

[illegible]



## THE CLASS SECRETARY

In the last analysis, the efficacy of a class organization depends upon the personality of the secretary. It is very human for a graduating class to elect to this position the most popular man or woman, but as often as not such a selection may prove unfortunate. There is very likely to be some less conspicuous member of the class, filled with class spirit and loyalty to the institution, who would love the work and who would in fact make it his hobby. When such a person is found and elected to the class secretaryship, the class is indeed fortunate, and the incumbent should have a life tenure. In some institutions a class constitution with provision for a class secretary is prepared by the alumni organization for adoption by the class at the time of graduation. At the same time funds from the senior class treasury should also be provided for the first few years. Once the class is scattered, it is very difficult for its secretary to defray the expenses of letters, printed matter, etc. unless he digs deep into his own pocket. It is always important, therefore, that he have a reserve fund to tide him over, at least until the first reunion.

## ALUMNI FUNDS

Closely allied to the class organization is the alumni fund of which mention has already been made. In fact, at Yale each class has, in addition to a class secretary, a class agent, who is the fund officer. The principal of such a fund arises from several sources, — individually from alumni in the form of annual contributions which the class agent never allows to lapse if he can help it, from bequests and from outright gifts, and collectively from special contributions by classes at stated reunion periods, particularly the twenty-fifth.

At Yale the alumni fund is divided into the income annually given the university and a principal fund. In general the contributions from individual alumni make up the annual income, while the larger gifts, particularly from reunion classes, swell the principal, which is kept intact.

Since its establishment in 1890 the sum of \$4,246,021.29 has been given to Yale University outright, while \$3,859,575.43 has been retained in the principal fund. The total receipts from interest on the principal of the fund over a period of thirty-eight years are \$1,336,895.59 while the expenses, printing, postage, etc. have amounted to only \$245,171.40.

The total receipts for 1927-1928 amounted to \$670,102.21. This is a truly remarkable record which many other universities are seeking to

emulate. Although everywhere else the alumni fund was established at a much later period than at Yale, some universities have already equaled Yale's record during the earlier years. Thus funds of this character are in successful operation at Brown, Columbia, Dartmouth, and Cornell.

Ordinarily these alumni funds are administered by an incorporated body of alumni acting as a board of trustees. The desire to keep this form of gift as a fluid source of income to the institution is everywhere fundamental. Such a fund may be used at the discretion of the alumni officers for whatever purposes may seem to them most urgent after consultation with the university authorities, whether it be new buildings, the purchase of books, the equipment of a laboratory, increase in faculty salaries, or the support of certain alumni activities.<sup>30</sup>

#### COEDUCATION IN ALUMNI ORGANIZATIONS

Just here it may be appropriate to say something regarding the relationship of coeducation to alumni organization. The careful distinction between the alumni and the *alumnæ* is very confusing, particularly to the uninitiated to whom these distinctions are so distracting. Would that all university graduates might be known simply as "alumni," as was suggested by Dr. James Burrill Angell, under whose direction the first great experiment in coeducation was tried.

Coeducation brings special problems, particularly in the state universities. Theoretically no distinction should be made between the men and the women in alumni organizations. Often there is none, but in practice it has been sometimes found desirable. In some universities the women have even gone so far as to organize a subsidiary body, functioning in much the same way as the general alumni organization, seeking means to deal more effectively with the particular needs of the university women. They have their own officers and encourage the formation of local *alumnæ* groups. Usually, however, they have their own representatives on the board of the general association. In some cases the men and women in the classes have their own separate secretaries and sometimes hold their reunions separately, in the belief, which seems to be justified, that their interests are sufficiently differentiated to make this desirable.

In some coeducational universities the system of separate local clubs for men and women is also well established. Ordinarily they have their separate meetings, smokers for the men, teas for the women; but on stated occasions they meet together, perhaps to greet some representa-

<sup>30</sup> Annual Reports of alumni funds at Yale and other institutions.

tive from the university. It has been found that these separate organizations often lead to better results, simply because a more informal and fraternal spirit is possible. Where the alumnus brings his wife, who is not a graduate, and the alumna (we follow alumni conservatism in thus distinguishing the men and women) a husband with university affiliations elsewhere, almost necessarily a touch of formality at once creeps in. Therefore it has come to be recognized that better results may sometimes be obtained from separate organizations, particularly in the larger cities, where for the most part the only tie is the status of the individual members of the group as alumni of the university. In smaller places, where everyone knows everyone else, this problem is less serious.

#### ALUMNI LISTS AND CATALOGUES

In many universities an important function of the alumni organization is the maintenance of the list of graduates and the publication, at stated intervals, of an alumni catalogue. Almost invariably this is one of the first tasks undertaken by an alumni association. Correct lists are vitally necessary if the alumni seek to function effectively. To build up such a list requires years of effort, the patience of Job, and a certain personal interest on the part of the officer in charge, incomprehensible to most alumni. Fortunately there are always persons who are ready to undertake work of this sort with real enthusiasm.<sup>31</sup>

Registration cards, lists of graduates, and forwarding addresses left by seniors must almost inevitably form the point of departure for such a catalogue, particularly if the student leaves with the university not only his home address and his future location but the names of several friends or acquaintances to whom the university can turn in case the individual student becomes an "unknown." Class secretaries, local clubs, the subscription list of the alumni publication, directories, telephone books, postmasters, county clerks, and "oldest inhabitants" are among the sources of information which must be used by the director of any alumni catalogue. Circular letters, of course, are necessary, — as many of them as possible. As the number of cards in the file increases, however, the charge for postage becomes an item which eventually makes every general circularization a matter for long and careful thought. Every letter should bear a two-cent stamp. Third-class postage, which does not carry forwarding privileges, is poor economy when information of this character is sought.

<sup>31</sup> Henry P. De Forest. *Class Secretaries and their Duties*, pp. 38–64. Cornell Association of Class Secretaries, 1913; also the *Manual of Alumni Work* (1924), pp. 51 and 57.

The great test of the alumni-catalogue office comes with the publication of quinquennial and decennial catalogues, particularly for the larger university. Immediately the arrangement, the system of abbreviations, and the amount of biographical information to be included become of great importance. In general it has been found that punctuation can be largely eliminated, and that almost every type of information can be abbreviated with no sacrifice of effectiveness. Unless the list is too long, it is highly desirable to publish the names first by classes, then alphabetically in the form of an index, and finally, if possible, in a geographical arrangement by states and cities. Such a book is costly, but it is always worth the money and effort expended.

The larger the alumni list becomes, the greater the difficulty in its maintenance and the more expensive the published catalogues. In the larger and older institutions it has been found that sooner or later a time arrives when the whole resources of the alumni association threaten to be absorbed by it. The practice has therefore become more and more general for the university to assume this task. In some institutions the work is done by the alumni association, though financed by the university. In most of the larger universities the alumni lists are maintained, and the alumni catalogue is published, by the university itself.

#### CRITICS OF THE ALUMNI

It is perhaps inevitable that this development of alumni participation in the activities of our colleges and universities should not pass without close scrutiny and even sharp criticism. It is probably a healthy sign that our whole expanding educational system has been under fire. We have become familiar with many objections to the present-day curriculum. For some it is too all-inclusive; others find it too narrowly limited; still others regret the submergence of the old humanities, the increasing demands for technical and vocational training, and the emphasis on athletics and physical training. The growing power of the secondary schools, the conservatism of governing boards, and the threatening materialism of the whole educational outlook also have all had their critics, from within as well as without the academic shades. Therefore it is small wonder that, with their increasing importance, the graduate bodies have not escaped. The alumni are charged with an undue absorption in the superficial and obvious aspects of university activities, — with athletics in particular; their demand, say the critics, is for practical and utilitarian training. The old high idealism is forgotten. To these critics it appears that the

alumnus knows nothing of modern education and its problems, — in fact, is not interested in them. He insists that the university be crystallized for all time in the institution he knew as a student. Let no one dare lay profane hands on time-honored customs and ivy-covered walls.<sup>32</sup>

It can be said at once that there is truth in this view of the graduate attitude. No one who stands, so to speak, at the crossroads between the paths of the university and the alumni can fail to see truth in what many of the critics say; but he will also recognize the futility, the lack of vision behind their attacks, the failure to see that a new order is rapidly evolving in our colleges and universities which demands constructive vision rather than, to say the least, a limited conception of the more obvious manifestations of the graduate spirit. From the alumni point of view, certainly, the universities are to blame as much as the graduates for the latter's failure to comprehend these forces and to utilize them to the fullest extent. What the situation calls for is a spirit of sympathetic coöperation on both sides. The alumni are in and of the university as never before, and as far as we can see they are there to stay; it is therefore the part of wisdom for both faculties and alumni to make conscious effort toward a better mutual understanding and united effort for the welfare of the institution which they represent.

### ATHLETICS

In a large measure it is safe to say the criticisms directed against the alumni rest upon their preoccupation with intercollegiate athletics. In this respect a certain percentage of our college graduates seem to be excellent examples of what Dr. Joseph Collins calls "adult infantilism." They honestly believe that in emphasizing as they do the healthy body they are advancing the interests of the university, forgetting entirely the corollary of the sound mind. For them, whether they realize it or not, sport forms the sole focus of their university interests. Everything, for this type of graduate, is interpreted in its relation to the possibility of a winning team. The corrective for such a distorted point of view lies in a change in emphasis rather than in the radical revision often advocated.

After all, it must be acknowledged by any open-minded observer that intercollegiate sport has a definite place in the modern educational system. One can hardly vision the effort it would take to uproot it.

<sup>32</sup> Percy Marks. *The Pestiferous Alumni*. *Harper's Monthly Magazine*, 153: 144-149, July, 1926. This was later included as a chapter in Mr. Marks' book "Which Way Parnassus?" (Harcourt, Brace and Company, Inc., 1926).

It is a part of our American inheritance,—an evidence of a sport-loving, active pioneer ancestry which has put its indelible mark upon our more recent cosmopolitanism. Moreover, it performs a real service in prolonging the spirit of youth; it is an effective and serviceable bridge, if rightly used, between undergraduate and graduate life. The student may be, and usually is, interested in the more obvious aspects, the externals of college life; but if the university has performed its task, if the influence has been sound and helpful, and if the student has acquired a broader, more idealistic point of view, these things will eventually emerge above the welter of student affairs, athletics, and fraternities which fill the undergraduate cosmos. Let the graduate be absorbed in athletics; except for the incurable Peter Pans it will be, or should be, only a stepping-stone for an interest in the deeper and more fundamental scholarly and intellectual activities of the institution, which will evolve normally as the years pass. It is desirable, however, to point out in this connection that, aside from the teaching of the classroom, more often than not there is little effort made to stimulate a broader, more thoughtful view on the part of the younger graduates.

It is even possible to make athletics serve as an introduction to educational problems. However one may criticize the present expansion of collegiate, and particularly intercollegiate, sports, it is in some measure at least, responsible for constantly improving standards in athletic relationship between rival institutions. Thus a general recognition, by the alumni, of the desirability of conducting intercollegiate athletic competition with reference to the fundamental educational aims of the institution has made possible an increasing insistence on a strict interpretation of the amateur-status and eligibility rules.<sup>33</sup>

#### ALUMNI AND FACULTY

The interest of the great body of graduates in the university is generally recognized, though a comprehension of the permanent and enduring aspects of the university must often be discounted. This is true despite tangible evidence, in the form of gifts, buildings, endowments, professorships, and what not, that the donors are at least alive to some of the spiritual needs of the institution. Long experience has shown that for every graduate, or group of graduates, who are able to make the desire to "do something" for the institution take concrete form, there are hundreds of others who regret that any definite expression of their interest must necessarily take some other form.

<sup>33</sup> Charles W. Kennedy. *College Athletics*. Princeton University Press, 1925.

Everyone who has been privileged to represent his university before a group of alumni will sense a keen and stimulating interest in the information he is able to give about the institution, and the welcome given to a frank statement of the undercurrents of university life.

We may assume, then, that the alumni are interested as individuals and as collective groups, though not always very intelligently. Sometimes their attempts are rather blundering and inept, but they are sincere in their efforts to be of service, and their desire deserves a better reception than it often receives. The cash is welcomed, though even then the gift is occasionally accepted in a critical spirit,—sometimes justly so, when the donor has not taken the trouble to acquaint himself sufficiently with the policies of the university administration.

While there may be those who feel that the present situation is on the whole satisfactory, to others it is obvious that neither the universities nor the alumni are accomplishing a quarter of what might be done if the relationship between the institution and the alumni were established upon a more truly sympathetic basis.

At the present time it must be acknowledged that there is a lack of understanding between the faculty and the alumni. The teacher, on the one hand, may be proud of the record of his individual students as they put to practical test the teaching they have received, but he suspects any collective effort on their part. He does not always recognize that the university lives in its former students, that what the graduate does and thinks is a reflection of, and sometimes on, what he learned in college. On the other hand, the graduate, though he is almost sure to hold many of his teachers, personally, in the highest respect and reverence, is apt to consider the faculty as a whole a body of ineffectual theorists,—men who teach because they have drifted along a line of least resistance rather than accepted the challenge of the world of affairs. Again, it must be recognized that there is often some justification for the collective attitude of the two bodies. The task before both the universities and the alumni organizations is to spread the leaven of respect and esteem, to foster an *entente cordiale*, to the end that the individual friendships may bring about a truer coöperation between faculty and graduates.

It is perhaps advisable that this problem of the alumni, which is in a sense that of the acknowledgement and regularization of their place as an integral part of the university body, be considered a little more in detail. It may be discussed from two points of view: (1) the obligations resting upon the institution, and (2) those resting upon the alumni as an organized body.

## A RECIPROCAL RELATIONSHIP

1. *For the University: Educate the Alumni*

Such a program as has been suggested implies, in the first place, a definite gesture on the part of the college bodies. It means an effective realization of the fact that the relationship between the graduate and his alma mater should be for life, and that a constructive program on the part of the institution is indicated. Ex-President Little of Michigan has suggested that one basis for this relationship lies in what he calls an alumni university. In his view this should rest not alone on the business or professional interests of the graduate but on his hobbies, the occupations of his off hours,—on anything that gives the university an opportunity, through its multifarious activities, to coöperate intimately with him in their mutual interest. Here is a basis for an abiding and constructive coöperation which will further the lifelong partnership that must form one of the rocks upon which our university system of the future will rest.

Many university officers, as well as alumni officers, are realizing the need of adult educational effort<sup>34</sup> carried over into the alumni years, although as yet the graduate and faculty bodies are less conscious of the desirability of such a program. Efforts here and there—the reading-list programs at Smith, Dartmouth, Lafayette, Pittsburgh, and elsewhere, the Alumni College at Lafayette (first held in June, 1929), the alumnae conferences at Vassar, Radcliffe, and other institutions, and the effective incorporation of the alumni of Dartmouth into the academic program—indicate possibilities in a continuing educational effort for the alumni.

At present the movement is only in a tentative and experimental stage, but enough has already been accomplished to suggest that progress in this special field of alumni relations may expand rapidly in the future. It must be recognized, however, that only a relatively small proportion of any alumni body will be actively interested at first and that in general a program for continued education will most concern those graduates of the middle years who have acquired a certain leisure and desire to renew studies often necessarily discontinued immediately after graduation. Such an effort to establish an intellectual relationship between the college and its former students will necessarily involve a revolution in the whole field of alumni relations which will take years to bring about. A spirit of coöperation between

<sup>34</sup> Alumni and Adult Education, An Introductory Survey. American Association for Adult Education, 1929. W. B. Shaw, New York.



university and faculty bodies on this basis can develop only slowly, and the beginnings properly should be made while the individual is still a student. The changes in the undergraduate curriculum, honors courses, and orientation courses for students are indications that it will not be long before we have a considerable element in our alumni bodies interested in other things besides athletics and material development.

Likewise, the alumni must be better informed on university questions and activities. The general absorption in college sports on the part of the alumni is a result, in part at least, of the fact that athletics form the only available form for the active and conspicuous expression of college loyalty. No effort is made to present effectively or intelligibly to the layman other aspects of the institution's development, except through the publications of the alumni themselves. This neglect of the alumni on the part of the institution is naturally more obvious in some universities than in others, for in the older colleges and universities of the East the alumni are almost invariably kept better informed than elsewhere, and it is precisely in these institutions that the graduate influence has made itself most felt in constructive and effective coöperation.

It is all a question of educating the alumnus for his responsibility. At present the average young graduate, and many an older one, does not know what it is all about. A definite course of training, therefore, should begin in student days. The undergraduate must be prepared for his future as an alumnus. A college course on the university itself — its problems, history, and educational ideals — might well be demanded of every student; in fact, some universities are already giving these courses. Such a course should be made interesting and stimulating in its appeal to that intangible but ever-present sentiment known as college spirit.<sup>35</sup>

As President Chase of North Carolina states it: "How, indeed, can an alumnus understand his university in middle life if he has not somehow got the feel of it as an undergraduate?"<sup>36</sup>

The present tendency to cut off all active contact, *as far as the university is concerned*, between student and university the minute a bit of parchment changes hands is, to say the least, short-sighted. That is precisely the instant when the student is most ready to become a thoughtful and active element in the greater university commonwealth. It is at least significant of the potential interest and loyalty

<sup>35</sup> Clarence Cook Little. *The Alumni and the University. Report of the Thirteenth Conference of the Association of Alumni Secretaries* (1926), p. 104.

<sup>36</sup> *Handbook of Alumni Work*, p. 10. University of North Carolina, 1925.

of the graduates that almost invariably the first efforts have come from the alumni. They have sensed, better surely than the universities, the implications of the relationship they are consciously seeking to foster. The next step lies with the institutions themselves, — with the administrative officers and faculties. They must embark on a constructive and far-reaching program designed to bridge the years and space which separate alma mater from her children.

## *2. For the Graduates: Study the University*

But if an obligation rests upon the university to cultivate the alumni, to create a true "alumni university" in which commencement shall represent an incident, — a milestone perhaps, but not a terminus, — equally there rests an obligation upon the graduates. Though the alumni have taken the first step in their organizations, and in general the next move rests with the college or university, there are duties resting upon the alumni which are not generally understood by the individual graduate. As has been pointed out by many observers, it is the material welfare of his college which holds the most significance for the average college men. He bothers himself not a whit, or very little, with its fundamental aims, except as they are represented externally in its standing in the educational world.

This is not surprising when we consider how little the average graduate thinks, or is led to think, about those things. Yet he must know about them; he must constantly seek opportunities to inform himself about the institution if he is to remain effective as an alumnus and if the whole alumni effort is to justify the time and energy spent in creating this machinery.

Thus every alumnus must be brought to recognize, freely and with an understanding of what it implies, that the fundamental aim of a university is education in its broadest sense, — not alone credits for certain courses listed in the catalogue, but a four-years training which recognizes the development of the heart and body as well as the mind, and which takes in the spiritual and physical aspects of college life as well as the mental development. In other words, he must not only recognize whole-heartedly the significance of book learning, so-called, but he must coöperate with the university in relating it to life.

It is safe to say that few college graduates would question such a statement, but there are many, unfortunately, whose interest in some one aspect of the university activities — athletics more often than not — leads them to forget, or to act as if they had forgotten, the object which underlies the institution. They may tacitly recognize

its educational aims, but in practice overlook them utterly. For them it is as if the university existed for a championship team, as far as expression of any other intelligent interest in her welfare is concerned. It is alumni of this type that often make difficult the proper solution of vexed questions of athletic policy as they affect the true welfare of the student body.

Again, many alumni are apt to minimize the function of the faculty, to show small comprehension of the fact that the task of the university educator is in reality a highly technical one. The average graduate is apt to feel that he is competent to decide upon matters which have been long and seriously considered by properly qualified experts, — the faculty. This is a point of view which is responsible for much of the misunderstanding between the graduate bodies and the faculties of our universities. The graduate, accustomed to rapid decisions in business affairs, is apt to be impatient at what seem to him the different and often slower methods of the university men. He feels competent to pass judgment on what are really professional matters, just because they are in the university field, when he would never dream of questioning the conclusions of his physician or his lawyer.

#### THE FUNDAMENTALS OF ALUMNI EFFORT

If it is thus necessary for the individual college graduate to recognize effectively the educational aim of the institution he represents, as well as the real competence of the faculty in its administration, the same obligations rest upon the alumni body as a whole. These premises upon which alumni activities must of necessity rest may appear to be platitudes, but it is perhaps just because they are somewhat trite and obvious that they are not sufficiently recognized as constituting a proper basis for the future expansion of alumni relations. Yet, in the last analysis, the efforts of the alumni must tend to become meaningless, all sound and froth, unless they accept these conceptions as active principles in their charter of rights and liberties in the university world.

In the past, alumni organizations (and here we speak of smaller groups rather than of the general associations), while perhaps paying lip service to these principles, have often overlooked them utterly. Their preoccupation has been athletics, the recruiting of students, or the raising of funds for some purpose or building which, while it may have made its appeal to the graduate imagination, did not serve directly the most obvious and pressing requirement of the institution. In saying this, however, there is no thought of denying to the alumni their

proper place in university councils or of withholding from them the privilege of setting forth their collective views in the proper time and place. Properly expressed, the informed and intelligent support of the alumni is one of the greatest sources of strength for our colleges and universities. It can be, on occasion, a very effectual corrective to a narrow scholastic conception of the world of affairs, which sometimes fails to bring university education into a wholesome and proper correlation with our modern existence. It is the duty and the privilege of the alumni to see that this support is stimulated in every possible way, and to make sure that it is exerted through channels that make for the ultimate good of our colleges and universities. It must be recognized also that in building up their far-reaching associations the alumni are really forging a two-edged sword; with its fashioning there must also develop the necessary skill to use it effectively and the wisdom involved in knowing when to use it.

It has been suggested that the spirit of the graduate body makes for conservatism. It lays a restraining hand upon progress, in American universities as well as abroad. In effect, it says, "Let no hand be laid upon the customs, the curriculum, or the buildings of one's own student days." But quite as often, perhaps, the pressure lies in the other direction. Alumni initiative may easily launch, in the guise of progress, up-to-date methods, or efficiency, — new and radical ideas which tend to impose false standards in purely academic affairs and to impair the effectiveness of the university as a center of culture and scholarly ideals. If the effort fails it is the university that suffers directly, not the alumni, — a sobering thought to act as a brake upon too hasty action on the part of the alumni body. Therefore, above all, the graduate as an individual must insist that he is represented in his organizations by officers qualified by wisdom, experience, and sympathy, as well as by knowledge of the institution, to work in close personal coöperation with its administrative officers and faculties.!

### SUMMARY

The alumni, through their widespread organizations and unstinted generosity, have won for themselves the status of an active partnership in the university fellowship, — a relationship, however, which needs to be more fully recognized and stabilized. The college or university, the faculty body, must be more ready to acknowledge the good will of the alumni and to share with the graduates the problems that face them. The alumni, on the other hand, must recognize more clearly and intelligently the fundamental ideals and purposes of the

institution, must find the most suitable avenues for their expression, and must seek to fit themselves for the responsibility which they are assuming. On such a basis will rest, in future years, an incalculable development of higher education in America.<sup>37</sup>

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<sup>37</sup> For further bibliographical references, as well as for a survey of the present status of alumni coöperation in university policies and problems, see W. J. Newlin, Report of Committee G on Educational Relations with Alumni, *American Association of University Professors, Bulletin* Vol. XI, No. 7, November, 1925 : pp. 365–382 ; also Professor Newlin's discussion in the Report of the Thirteenth Conference of the Association of Alumni Secretaries (1926), p. 87.











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